

ENVIRONMENTAL ASSESSMENT
AND
REGULATORY IMPACT REVIEW
FOR AN
EMERGENCY RULE

TO IMPLEMENT MANAGEMENT MEASURES
IN THE ATLANTIC SHARK FISHERIES
CONSISTENT WITH THE 2002 STOCK ASSESSMENTS

United States Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Highly Migratory Species Management Division

December 2002

Emergency Rule to Implement Management Measures in the Atlantic Shark Fisheries Consistent with the 2002 Stock Assessments

Framework Adjustment to the Fishery Management Plan for Atlantic Tunas, Swordfish and Sharks

Actions: Implement annual quotas of 783 metric tons (mt) dressed weight (dw) and 931 mt dw for the commercial ridgeback and non-ridgeback large coastal shark (LCS) fisheries, respectively; implement an annual quota of 326 mt dw for the commercial small coastal shark (SCS) fishery; suspend the regulation regarding the commercial ridgeback large coastal shark minimum size; establish the regulations on season-specific quota adjustments; and establish counting dead discards and state landings after a Federal closure against the commercial quotas.

Type of Statement: Environmental Assessment and Regulatory Impact Review

Lead Agency: National Marine Fisheries Service

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Abstract: Since 1997, the National Marine Fisheries Service (NOAA Fisheries) has been sued numerous times regarding shark management measures. These lawsuits have come from a variety of user groups including commercial fishermen, recreational fishermen, and environmentalists. In December 2000, NOAA Fisheries settled two lawsuits with commercial fishermen. The court-approved settlement agreement included, among other things, independent peer-reviews of the 1998 and new 2002 LCS stock assessments and a commitment to maintain the LCS and SCS quotas at 1997 levels pending the new 2002 assessments. After reviewing all peer reviews of the 1998 LCS stock assessment, NOAA Fisheries issued an emergency rule in December 2001 (66 FR 67118) in which it determined that the projections of the models used in the 1998 LCS stock assessment no longer constitute the best available science. The December 2001 emergency rule was designed to maintain the status of LCS and SCS pending the new 2002 stock assessments. In that emergency rule, NOAA Fisheries made a commitment to re-evaluate the management measures promulgated in that emergency rule based on the new stock assessments before any of these measures would be re-implemented. That emergency rule expires on December 30, 2002.

This rulemaking is necessary because, once the December 2001 emergency rule expires, certain measures from the 1999 Final Fishery Management Plan for Atlantic Tunas, Swordfish and Sharks (HMS FMP), which were based on the projections from the 1998 LCS stock assessment, will go into place unless regulations are promulgated to replace them. Furthermore, NOAA

Fisheries now has updated stock assessments for both LCS and SCS that constitute the best available science for these complexes. The results of these stock assessments indicate that the status of both LCS and some species of SCS have changed since previous stock assessments. New regulations are needed to reflect this change in status. NOAA Fisheries has one objective for this rulemaking: to amend management measures that may no longer be based on the best available science and/or that were implemented in the HMS FMP and later suspended or revised in the December 2001 shark emergency rule. The management measures promulgated in this rulemaking, along with many other shark management measures implemented in the HMS FMP, will be re-evaluated in an amendment to the HMS FMP, which NOAA Fisheries announced it would initiate through a Notice of Intent issued on November 15, 2002 (67 FR 69180).

FINDING OF NO SIGNIFICANT ENVIRONMENTAL IMPACT

The Highly Migratory Species Management Division of the Office of Sustainable Fisheries submits the attached Environmental Assessment (EA) for the Atlantic shark fisheries for Secretarial review under the procedures of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). This EA was developed as an integrated document that includes a Regulatory Impact Review. Copies of the EA and Regulatory Impact Review are available at the following address:

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<http://www.nmfs.noaa.gov/sfa/hmspg.html>

The action implements the following measures:

- Annual quotas of 783 metric tons (mt) dressed weight (dw) and 931 mt dw for the commercial ridgeback and non-ridgeback large coastal shark (LCS) fisheries, respectively;
- An annual quota of 326 mt dw for the commercial small coastal shark (SCS) fishery;
- Suspension of the regulation regarding the ridgeback LCS minimum size;
- Establishment of the regulations on season-specific quota adjustments; and,
- Establishment of the regulation counting dead discards and state landings after a Federal closure against the commercial quotas.

The EA considers information contained in the Environmental Impact Statement associated with the HMS FMP, the 2002 SAFE report, the seven peer reviews of the 1998 LCS SEW, and the 2002 LCS and SCS stock assessments and associated documents. All information used is herein incorporated by reference.

NOAA Administrative Order 216-6 identifies nine criteria, in addition to the Council on Environmental Quality's regulations at 40 C.F.R. § 1508.27, for determining the significance of the impacts of an action:

1. *Can the action be reasonably expected to jeopardize the sustainability of any target species that may be affected by the action?*

The action is not expected to jeopardize the sustainability of LCS or SCS, which are the target species affected by the action. The action facilitates the rebuilding and maintaining of shark stocks and is not expected to result in a change to fishing practices, effort, or shark landings.

Suspending the LCS ridgeback minimum size may result in continued landings of smaller sharks, but also would not increase dead discards. The preferred SCS quota will cap current landings to minimize potential impacts to finetooth sharks pending completion of an FMP amendment.

2. *Can the action be reasonably expected to jeopardize the sustainability of any non-target species?*

The action is not expected to jeopardize the sustainability of any non-target finfish species. Finfish bycatch for the bottom longline fishery includes, in order of occurrence, snappers/groupers, red drum, cobia/dolphin, catfish, eel, barracuda, tuna/swordfish, and jacks. According to the HMS FMP, finfish bycatch was only approximately 3.2 percent of the catch in the bottom longline fishery. In the shark drift gillnet fishery, bycatch includes king mackerel, little tunny, cownose ray, crevalle jack, cobia, spotted eagle ray, great barracuda, tarpon, Atlantic stingray, and Spanish mackerel and accounts for approximately 7.4 percent of the catch (Carlson 2001). Because the action will not result in a change in fishing effort or practices, NOAA Fisheries does not expect that sustainability of these bycatch species will be jeopardized by the action.

3. *Can the action be reasonably expected to allow substantial damage to the ocean and coastal habitats and/or essential fish habitat (EFH) as defined under the Magnuson-Stevens Act and identified in FMPs?*

Because this action is not expected to change fishing practices or effort, this action is not expected to change the impact on EFH or to allow substantial damage to ocean and coastal habitats and/or EFH. The action would affect fishermen who hold commercial shark limited access permits fishing in state waters, the U.S. exclusive economic zone (EEZ), or the high seas. As described in the HMS FMP, because bottom longline does touch the bottom substrate, the gear could become hung or entangled on various elements of the substrate and could alter the habitat for prey species. However, bottom longline gear is not likely to cause substantial damage. As described in the HMS FMP, NOAA Fisheries recommends fishermen take appropriate measures to identify and avoid such bottom obstructions in order to mitigate any adverse impacts. The other gear types used to target sharks are unlikely to have any impact on essential fish habitat.

4. *Can the action be reasonably expected to have a substantial adverse impact on public health and safety?*

The action is not expected to have substantial adverse impacts on public health and safety. The action of suspending a minimum size requirement will have a positive safety impact, because fishermen would not have to fish as far offshore to avoid smaller sharks. The actions of increasing the LCS annual quota slightly might have a positive safety impact because the season could be longer, thus further minimizing the “race for the fish.”

5. *Can the action be reasonably expected to have an adverse impact on endangered or threatened species, marine mammals, or critical habitat of these species?*

Impacts of fishing for large and small coastal sharks were considered in a June 2001 Biological Opinion issued under section 7 of the Endangered Species Act. The action is not expected to alter fishing practices or fishing effort and will not have any impacts not previously considered on endangered or threatened species, marine mammals, or critical habitat of these species. While the preferred LCS quota would increase the quota that is currently in place, it will not result in increased fishing effort or changes in fishing practices, as the quota falls within the range of average LCS landings for all commercial fishermen from 1999 to 2001. Thus, no increased interactions with or impacts to critical habitat of sea turtles or other protected species is anticipated.

6. *Can the action be reasonably expected to result in cumulative adverse effects that could have a substantial effect on the target species or non-target species?*

The action is not expected to result in cumulative adverse effects that could have a substantial effect on target species or non-target species. Based on the results of the 2002 stock assessments for LCS and SCS, under past and present management measures, some shark stocks continue to be overfished but are rebuilding, some shark stocks are fully rebuilt, and some shark stocks are fished sustainably. While the 2002 SCS stock assessment does indicate that overfishing is occurring on finetooth sharks, the biomass of the stock is still above the level at which it would be considered overfished. The preferred measures should maintain that level until a rebuilding plan is implemented. In all, the final actions would continue to prevent overfishing or facilitate rebuilding of the stocks without adverse economic or social impacts pending an amendment to the HMS FMP.

7. *Can the action be reasonably expected to have a substantial impact on biodiversity and ecosystem function within the affected area (e.g., benthic productivity, predator-prey relationships, etc.)?*

The action is not expected to have a substantial impact on biodiversity and ecosystem function within the affected area, because the action is not expected to change fishing activity or practices, landings of target species, and interactions with non-target and endangered or threatened species.

8. *Are significant social or economic impacts interrelated with significant natural or physical environmental effects?*

The final actions are not expected to have any significant, positive or negative, social or economic impacts. Over the long term, the preferred LCS quota may have some minor positive economic and social impacts. The final action of suspending a minimum size requirement will have a positive social impact, because fishermen would not have to fish as far offshore to avoid smaller sharks.

9. *To what degree are the effects on the quality of the human environment expected to be highly controversial?*

Although there has been litigation over prior shark-related management actions, the action does not have controversial or significant effects on the human environment. As noted above, the alternatives would not result in changes in fishing activity, effort, or shark landings, and would have no significant ecological, economic, and social impacts. There are no effects on the human environment that are highly uncertain or that involve unique or unknown risks. In addition, the final actions do not establish new precedence. They consider management techniques that have been in use in this and different fisheries for a number of years. The action would not have an impact on State or local regulations outside the EEZ, and would not negatively impact other laws applicable to the EEZ.

For the reasons stated above, the emergency actions would not significantly affect the quality of the human environment, and preparation of an Environmental Impact Statement (EIS) on the action is not required by Section 102(2)(c) of the National Environmental Policy Act or its implementing regulations.

Approved: _Rebecca Lent for_____

 William T. Hogarth, Ph.D.

 Assistant Administrator for Fisheries, NOAA

__12/19/2002__

Date

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1.0. PURPOSE AND NEED FOR ACTION

1.1 Management History

In 1993, the National Marine Fisheries Service (NOAA Fisheries) implemented the Fishery Management Plan (FMP) for Sharks of the Atlantic Ocean, which established three management units: large coastal sharks (LCS), small coastal sharks (SCS), and pelagic sharks. At that time, NOAA Fisheries identified LCS as overfished, implemented commercial quotas for LCS and pelagic sharks, and established recreational retention limits for all sharks, consistent with the LCS rebuilding program.

In June 1996, NOAA Fisheries convened a Shark Evaluation Workshop (SEW) to examine the status of LCS stocks. The 1996 SEW found no clear evidence that LCS stocks were rebuilding and concluded that “[a]nalyzes indicate that recovery is more likely to occur with reductions in effective fishing mortality rate of 50% or more.” In response to these results, in 1997, NOAA Fisheries reduced the LCS commercial quota by 50 percent to 1,285 metric tons (mt) dressed weight (dw) and the recreational retention limit to two LCS, SCS, and pelagic sharks combined per trip with an additional allowance of two Atlantic sharpnose sharks per person per trip (62 FR 16648, April 2, 1997). In this same rule, NOAA Fisheries established an annual commercial quota for SCS of 1,760 mt dw and prohibited possession of five species. On May 2, 1997, the Southern Offshore Fishing Association (SOFA) and other commercial fishermen and dealers sued the Secretary of Commerce (Secretary) on the April 1997 regulations.

In 1996, amendments to the Magnuson-Stevens Act modified the definition of overfishing and established new provisions to halt overfishing and rebuild overfished stocks, minimize bycatch and bycatch mortality to the extent practicable, and identify and protect essential fish habitat. Accordingly, in 1997, NOAA Fisheries began the process of creating a rebuilding plan for overfished highly migratory species (HMS), including LCS, consistent with the new provisions.

On February 26, 1998, Judge Steven D. Merryday of the U.S. District Court for the Middle District of Florida issued an order in the SOFA case, finding that the Secretary “failed to conduct a proper analysis to determine the [April 1997 LCS] quota’s economic effect on small businesses” and directing NOAA Fisheries “to undertake a rational consideration of the economic effects and potential alternatives to the 1997 [LCS] quotas” on small businesses engaged in the Atlantic shark commercial fishery. Judge Merryday allowed NOAA Fisheries to maintain the 1997 quotas pending further order of the court.

In June 1998, NOAA Fisheries held another LCS SEW. The 1998 stock assessment found that LCS were overfished and would not rebuild under 1997 harvest levels. Based on the 1998 stock assessment, in April 1999, NOAA Fisheries published the final Fishery Management Plan for Atlantic Tunas, Swordfish and Sharks (“Highly Migratory Species” or HMS FMP), which included numerous measures to rebuild or prevent overfishing of Atlantic sharks in commercial and recreational fisheries. The HMS FMP reduced commercial LCS and SCS quotas, established ridgeback and non-ridgeback subgroups of LCS, implemented a minimum size for ridgeback LCS, reduced the non-ridgeback LCS commercial quota, established a commercial

quota for blue sharks, established a species-specific quota for porbeagle sharks and reduced the pelagic shark commercial quota accordingly, reduced recreational retention limits for all sharks, expanded the list of prohibited shark species, implemented limited access in commercial fisheries, established new procedures for counting dead discards and state landings of sharks after Federal fishing season closures against Federal quotas, and established season-specific over- and under-harvest adjustment procedures. The HMS FMP replaced the 1993 Shark FMP. The implementing regulations were published on May 28, 1999 (64 FR 29090). On June 25, 1999, SOFA *et al.* sued NOAA Fisheries again, this time challenging the Atlantic shark commercial measures implemented in the HMS FMP.

On June 30, 1999, NOAA Fisheries received a court order from Judge Merryday relative to the May 1997 lawsuit. Specifically, the order enjoined NOAA Fisheries from enforcing the 1999 regulations with respect to Atlantic shark commercial catch quotas and fish-counting methods (including the counting of dead discards and state commercial landings after Federal closures), which were different from the quotas and fish counting methods prescribed by the 1997 Atlantic shark regulations. A year later, on June 12, 2000, the court issued an order clarifying that NOAA Fisheries could proceed with implementation and enforcement of the 1999 prohibited species provisions in 64 Fed. Reg. 29090 (May 28, 1999).

On November 21, 2000, SOFA *et al.* and NOAA Fisheries reached a settlement agreement for both lawsuits. On December 7, 2000, Judge Merryday entered an order approving the settlement agreement. The settlement agreement required, among other things, an independent (i.e., non-NOAA Fisheries) review of the 1998 LCS stock assessment. NOAA Fisheries received the results of the complete peer reviews in October 2001. The settlement agreement did not address any regulations affecting the pelagic shark, prohibited species, or recreational shark fisheries. On March 6, 2001, NOAA Fisheries published an emergency rule implementing the settlement agreement (66 FR 13441).

Taking into consideration the settlement agreement, the peer reviews, current catch rates, and the best available scientific information (not including the 1998 stock assessment projections), NOAA Fisheries implemented another emergency rule, suspending certain measures under the 1999 regulations pending completion of new LCS and SCS stock assessments and a peer review of the new LCS stock assessment (66 FR 67118, December 28, 2001; extended 67 FR 37354, May 29, 2002). Specifically, NOAA Fisheries maintained the 1997 LCS commercial quota (1,285 mt dw), maintained the 1997 SCS commercial quota (1,760 mt dw), suspended the commercial ridgeback LCS minimum size, suspended counting dead discards and state landings after a Federal closure against the quota, and replaced season-specific quota accounting methods with subsequent-season quota accounting methods. This emergency rule expires on December 30, 2002.

On May 8, 2002, NOAA Fisheries announced the availability of the first SCS stock assessment since 1992 (67 FR 30879). The Mote Marine Laboratory and the University of Florida provided NOAA Fisheries with another SCS assessment in August 2002. Both these stock assessments indicate that overfishing is occurring on finetooth sharks. The three other species in the SCS complex (Atlantic sharpnose, bonnethead, and blacknose) are not overfished and overfishing is

not occurring. Because management of SCS and LCS is interrelated, NOAA Fisheries commenced SCS rulemaking when the 2002 LCS stock assessment was complete.

NOAA Fisheries announced the availability of the LCS stock assessment on October 17, 2002 (67 FR 64098). The results of this stock assessment indicate that the LCS complex is still overfished and overfishing is occurring, that sandbar sharks are no longer overfished and that overfishing is still occurring, and that blacktip sharks are rebuilt and overfishing is not occurring. The peer review process, required under the court-approved settlement agreement, for the 2002 LCS stock assessment is expected to be complete in mid-December. During the development of this document, the LCS peer review was not available for consideration (the same peer review process was not required to be performed on the 2002 SCS stock assessment). NOAA Fisheries believes that the 2002 LCS stock assessment - a 222 page document with comprehensive analyses and various models and data sets - constitutes the best available science at this time. However, after the public comment period on the emergency rule is over, NOAA Fisheries will consider all public comments on this emergency rule and the results of the peer review and amend this emergency rule, if necessary.

1.2 Need for Action and Objectives

After reviewing all peer reviews of the 1998 LCS stock assessment, in the December 2001 emergency rule, NOAA Fisheries determined that the projections of the models used in the 1998 LCS stock assessment no longer constitute the best available science. Thus, a number of management measures in the 1999 HMS FMP were no longer appropriate. As a result, NOAA Fisheries based the December 2001 emergency rule on the best available science at that time: a combination of the current data at that time (e.g. landings, discards, biological) and catch rates, the 1996 LCS SEW, and the peer reviews. The December 2001 emergency rule was designed to maintain the status of LCS and SCS pending new stock assessments. In that emergency rule, NOAA Fisheries made a commitment to re-evaluate the management measures promulgated in that emergency rule based on the new stock assessments before any of these measures would be re-implemented. That emergency rule expires on December 30, 2002.

The current action is necessary because, once the December 2001 emergency rule expires, certain measures from the 1999 HMS FMP, which were based on the projections from the 1998 LCS stock assessment, will go into place unless regulations are promulgated to replace them. As noted above, NOAA Fisheries determined that portions of the 1998 LCS stock assessment no longer constitute the best available science. Furthermore, NOAA Fisheries now has updated stock assessments for both LCS and SCS which constitute the best available science for these complexes. The results of these stock assessments indicate that the status of both LCS and some species of SCS have changed since previous stock assessments. New regulations are needed to reflect this change in status.

NOAA Fisheries has one objective for this rulemaking: to amend management measures that may no longer be based on the best available science and/or that were implemented in the HMS FMP and later suspended or revised in the December 2001 shark emergency rule. The management measures promulgated in this rulemaking, along with many other shark

management measures implemented in the HMS FMP, will be re-evaluated in an amendment to the HMS FMP, which NOAA Fisheries announced it would initiate through a Notice of Intent issued on November 15, 2002 (67 FR 69180).

Under the authority to implement an emergency rule (section 305 (c) of the Magnuson-Stevens Act), the measures implemented in the current action will be effective for 180 days (maximum of 360 days if the emergency rule is extended) or until another action, such as an amendment to the HMS FMP, is implemented. In the event that the emergency rule is extended, this document was developed to address any potential impacts over the maximum period of the rule.

Additionally, while this fact that this rule would only be effective for a maximum of 360 days was considered when analyzing the alternatives, the time frame is not explicitly stated in the analyses because the alternatives considered, including the preferred alternatives, could have long-term impacts beyond the length of the emergency rule (e.g. the HMS FMP LCS quota alternatives (A2)) or could be implemented in a separate rulemaking that would last longer than the length of the emergency rule (e.g. could have been implemented in the HMS FMP or could be implemented in the amendment to the HMS FMP). In other words, this document addresses the impacts of the final actions in the short-(180 to 360 days) and the long-term.

Shark management measures that will not be addressed in this rulemaking but that will be evaluated in the amendment to the HMS FMP include, but are not limited to, the recreational retention limits and size limit, the prohibited species, the public display quota, and the commercial trip limits.

2.0 SUMMARY OF THE ALTERNATIVES

This section provides a summary and basis for all the alternatives considered in this rulemaking.

2.1 Large Coastal Shark Commercial Annual Quota Levels

Final Action

Alternative A1 *783 mt dw annually for ridgeback LCS and 931 mt dw for non-ridgeback LCS*

This alternative would implement an annual commercial quota of 783 mt dw for ridgeback LCS (sandbar, silky, and tiger sharks) and an annual commercial quota of 931 mt dw for non-ridgeback LCS (blacktip, spinner, bull, lemon, hammerheads, and nurse sharks). Under this alternative, the quota for the entire LCS complex would be 1,714 mt dw. These quota levels would be split evenly between the semi-annual fishing seasons.

Under this alternative, sharks reported as unclassified were split evenly between the ridgeback and non-ridgeback LCS groups. As described in the HMS FMP, sandbar and blacktip sharks are the major ridgeback and non-ridgeback species, respectively, landed in the LCS commercial fishery. For ridgeback LCS, this quota represents the average sandbar landings from 1999 through 2001 and half of all the unclassified landings from 1999 through 2001 by commercial shark fishermen, including fishermen fishing in state waters (773 mt dw), plus 50 percent of the average landings of the other ridgeback LCS (50 percent of 21 mt dw) (Tables 2.1 and 2.2). Similarly, for non-ridgeback LCS, this quota represents an addition of 20 percent to the average blacktip, spinner, and half of the unclassified landings from 1999 through 2001 by commercial shark fishermen, including fishermen fishing in state waters (755 mt dw + 20 percent), plus 50 percent of the average landings of the other non-ridgeback species (50 percent of 50 mt dw) (Tables 2.1 and 2.2). In this case, spinner sharks are considered in the blacktip portion of the quota because of the difficulty in distinguishing between the two species.

While the 2002 LCS stock assessment indicates that sandbar sharks can be rebuilt to optimum yield if current harvest levels are maintained, it also indicates that the LCS complex itself cannot. The stock assessment further indicates that the disparity between the results for sandbar and blacktip sharks and the complex as a whole may be because the other species in the LCS complex are responding differently to fishing and might be in decline. Thus, setting the ridgeback quota level on a slightly reduced level from the average ridgeback harvest, based on average landings of each species, is a precautionary measure to ensure the species in the ridgeback LCS group, other than sandbar sharks, do not decline further. A similar process was followed to ensure the non-ridgeback LCS, other than blacktip and spinners, do not decline further. The addition of 20 percent to the blacktip portion of the non-ridgeback quota level corresponds to the lower end of the increase suggested for blacktip sharks by the 2002 LCS stock assessment.

Alternatives Considered but Not Selected at this Time

Alternative A2 *620 metric tons (mt) dressed weight (dw) annually for ridgeback LCS and 196 mt dw annually for non-ridgeback LCS (No Action)*

This alternative would implement commercial quota levels of 620 mt dw for ridgeback LCS and 196 mt dw for non-ridgeback LCS, which are the quota levels established in the 1999 HMS FMP. As described in the HMS FMP, these quota levels were based on the rebuilding projections from the 1998 LCS stock assessment for sandbar and blacktip sharks. These quota levels have never been implemented. These quota levels would be split evenly between the semi-annual fishing seasons.

Alternative A3 *1,285 mt dw annually for the entire LCS complex*

This alternative would implement a commercial quota of 1,285 mt dw for the LCS fishery, which is the quota level, based on the 1996 LCS stock assessment, under which the fishery has been operating under since 1997. This quota would be split evenly between the semi-annual fishing seasons.

Alternative A4 *846 mt dw annually for the entire LCS complex*

This alternative would implement a commercial quota of 846 mt dw for the LCS fishery, which represents the average landings from 1999 through 2001 by commercial shark fishermen, including fishermen fishing in state waters (Table 2.1), minus 50 percent (Table 2.2). According to the 2002 LCS stock assessment, the LCS complex is overfished and a 50 percent reduction in the LCS harvest level has a greater than 65 percent chance of rebuilding the complex in 30 years. This quota would be split evenly between the semi-annual fishing seasons.

Alternative A5 *793 mt dw annually for ridgeback LCS and 966 mt dw annually for non-ridgeback LCS*

This alternative would implement an annual commercial quota of 793 mt dw for ridgeback LCS (sandbar, silky, and tiger sharks) and an annual commercial quota of 966 mt dw for non-ridgeback LCS (blacktip, spinner, bull, lemon, hammerheads, and nurse sharks). For ridgeback LCS, this quota represents the average landings from 1999 through 2001 by commercial shark fishermen, including fishermen fishing in state waters (Tables 2.1 and 2.2). For non-ridgeback LCS, this quota represents the average landings from 1999 through 2001 by commercial shark fishermen, including fishermen fishing in state waters, plus 20 percent (805 mt dw + 20 percent) (Tables 2.1 and 2.2). Sharks reported as unclassified (three year average of 277 mt dw, Table 2.1) were split evenly between the ridgeback and non-ridgeback groups. Thus, the total quota level for the LCS complex, under this alternative, is 1,759 mt dw. These quota levels would be split evenly between the semi-annual fishing seasons.

According to the 2002 LCS stock assessment, maintaining the harvest level for the sandbar shark, the major ridgeback LCS landed, has a greater than 70 percent chance of rebuilding

sandbar sharks to optimum yield in 10 years. Also, according to the 2002 LCS stock assessment, increasing the harvest level of blacktip sharks, the major non-ridgeback LCS landed, by 20 percent has a greater than 75 percent probability of increasing blacktip biomass. This alternative does not address the concern noted in the 2002 LCS stock assessment that some species in the LCS complex may be responding to fishing differently.

Other commercial LCS quota level alternative considered but not further analyzed

Alternative A6 *773 mt dw for sandbar sharks, 906 mt dw for blacktip and spinner sharks combined, 82 mt dw for all other LCS*

This alternative would implement commercial quota levels of 773 mt dw for sandbar sharks, 906 mt dw for blacktip and spinner sharks combined, and 82 mt dw for all other LCS species. These quota levels are based on the average commercial landings from 1999 through 2001, including fishermen fishing in state waters (Table 2.1). Unclassified sharks were split evenly between sandbar and blacktip/spinner sharks. The sandbar shark quota level maintains the average three year landings. The blacktip/spinner quota level adds 20 percent to the average three year landings. Additionally, blacktip and spinner sharks are grouped together due to the difficulty in distinguishing these two species. The quota level for the other species is 50 percent less than the average landings corresponding with the results of the 2002 stock assessment for the LCS complex. Under this alternative, the total quota for the entire LCS complex would be 1,761 mt dw.

For a number of years scientists and fishermen have asked NOAA Fisheries to manage Atlantic sharks on a more species-specific level. The quotas in this alternative would accomplish this. However, NOAA Fisheries has a number of concerns in implementing species-specific quota levels in a fishery of this nature. The shark species that are not sandbar or blacktip sharks are caught incidentally and are generally not targeted. Thus, limiting the incidental portion of the quota may result in additional dead discards in the fishery if this quota is reached before the sandbar or blacktip/spinner quotas.

Additionally, as previously discussed in the HMS FMP, correct species identification is a concern both in reporting and in enforcement. Identification is not as much of a concern with ridgeback and non-ridgeback LCS groupings discussed in alternatives A1 and A5 because the ridge is either present, or not, on the carcass. Because of these concerns, NOAA Fisheries does not believe species-specific quotas of this type are preferable in this rulemaking. However, NOAA Fisheries will revisit species-specific quotas again in the upcoming amendment to the HMS FMP.

2.2 Commercial LCS Size Limits

Final Action

Alternative B1 *No minimum size limit for ridgeback or non-ridgeback LCS*

This alternative would not implement any size limits for ridgeback or non-ridgeback LCS. This is the alternative the fishery has been operating under since the 1993 Shark FMP.

Alternative Considered but Not Selected at this Time

Alternative B2 *4.5 feet fork length (fl) for ridgeback LCS and no size limit for non-ridgeback LCS (No Action)*

This alternative would implement a 4.5 feet fl (137 cm) minimum size for ridgeback LCS. This alternative would not implement a minimum size for non-ridgeback LCS. This is the regulation that was finalized in the HMS FMP and never implemented. This action will go into effect if no action is taken.

Other LCS minimum size alternative considered but not further analyzed

Alternative B3 *Minimum size limits for different species*

This alternative could implement a different minimum size for different species based on an appropriate biological basis. The 2002 LCS stock assessment notes that juvenile survival is important to the population growth of many species of sharks. However, the 2002 LCS stock assessment does not give an indication of the specific size limits that should be considered to help manage the stocks on a species-specific level. Additionally, the same concerns regarding species-specific quotas (i.e., dead discards and identification) apply to multiple minimum sizes. Pending a full discussion in the amendment to the HMS FMP, NOAA Fisheries does not believe, at this time, it is appropriate to implement multiple minimum sizes.

2.3 SCS Commercial Annual Quota Levels

Final Action

Alternative C1 *326 mt dw annually for the SCS complex*

This alternative would implement a commercial quota for SCS of 326 mt dw annually. This quota level would cap landings at the highest level of landings by commercial fishermen, including fishermen fishing in state waters, in this fishery (Table 2.3). This quota would be split evenly between the semi-annual seasons.

Alternatives Considered but Not Selected at this Time

Alternative C2 *359 mt dw annually for the SCS complex (No Action)*

This alternative would implement a commercial quota for SCS of 359 mt dw annually. This is the quota level that was implemented in the 1999 HMS FMP and was 10 percent higher than the highest landings by commercial fishermen, including fishermen fishing in state waters. This management measure was a precautionary measure to prevent expansion of this fishery, pending a new stock assessment. At the time of the HMS FMP, the highest landings were in 1997 (320 mt dw). Updating the landings through 2001 (highest 326 mt dw in 2001) would result in the same quota level (Table 2.3). This quota would be split evenly between the semi-annual seasons.

Alternative C3 *1,760 mt dw annually for the SCS complex*

This alternative would implement a commercial quota for SCS of 1,760 mt dw annually. This is the quota level, based on estimates of maximum sustainable yield (MSY) in the 1993 Shark FMP, the fishery has been operating under since 1997. As shown in alternative C1, C2, and table 2.3, landings in this fishery have not approached this quota level. This quota would be split evenly between the semi-annual seasons.

Alternative C4 *300 mt dw annually for the SCS complex*

This alternative would implement a commercial quota for SCS of 300 mt dw annually. This quota level is based on the average landings by commercial fishermen, including fishermen fishing in state waters, from 1999 through 2001 (Table 2.3). This quota would be split evenly between the semi-annual seasons.

Other commercial LCS quota level alternatives considered but not further analyzed

Alternative C5 *23 mt dw annually for the SCS complex*

This alternative would implement a commercial quota of 23 mt dw annually for the SCS complex, based on the most conservative level of MSY given in the SCS 2002 assessment. This quota level was considered to prevent overfishing, pending a rebuilding plan, of finetooth sharks. This quota would be split evenly between the semi-annual seasons.

The 2002 SCS stock assessment indicates that a large number of finetooth sharks are caught in gillnets in the South Atlantic. However, observer program data show that the shark southeast gillnet fishery is not landing the number of finetooth sharks reported caught in gillnets. Thus, while this alternative would prevent overfishing of finetooth sharks, given the status of the other SCS, the uncertainty of the source of fishing mortality regarding finetooth sharks, the fact that fishermen targeting other SCS can catch finetooth sharks, and the fact that the Magnuson-Stevens Act provides NOAA Fisheries with one year once a species is declared overfished to develop a rebuilding plan, NOAA Fisheries does not believe it is appropriate to implement this

alternative at this time. NOAA Fisheries plans to examine the available information for finetooth and other SCS to determine the sources of fishing mortality and consider other alternatives, such as time/area closures, that may protect finetooth sharks while allowing for a SCS fishery.

Alternative C6 *Species-specific quota levels*

This alternative would implement a different commercial quota for each species in the SCS complex. As described in alternative A6 above, species-specific quotas for sharks can be difficult to enforce and manage because of species identification problems. This is especially true of SCS which can be misidentified as juvenile LCS. Thus, until this alternative can be fully discussed with public comment, NOAA Fisheries does not feel species-specific quotas for SCS are appropriate.

2.4 Accounting for all Fishing Mortality

Final Action

Alternative D1 *Count dead discards and state landings after a Federal closure against the Federal commercial quota (No Action)*

This alternative would count dead discards and state landings after a Federal closure against the Federal commercial quota. This alternative was finalized in the HMS FMP but has never been implemented. This alternative will go into effect if no action is taken.

Fishermen have expressed concern that taking dead discards and state landings after a Federal closure from the Federal quota constitutes “double dipping” because the mortality from dead discards and state landings are considered in the stock assessment. NOAA Fisheries has considered this concern and is proposing new quota alternatives that are based on average landings, including state landings, instead of using a percentage of the original quota finalized in the 1993 Shark FMP. Thus, because the preferred quota alternative explicitly includes state landings, any over- or under-harvest, including state landings after a Federal closure, can be counted against the Federal quota.

Alternative Considered but Not Selected at this Time

Alternative D2 *Do not count dead discards and state landings after a Federal closure against the Federal commercial quota*

This alternative would not count dead discards and state landings after a Federal closure against the Federal commercial quota. The fishery has been operating under this alternative since the 1993 Shark FMP was implemented.

Other alternative considered to account for all fishing mortality by not further analyzed

Alternative D3 *Establish a quota reserve*

Under this alternative, NOAA Fisheries would establish a quota reserve. In this case, if the quota was over-harvested or if there were a substantial number of dead discards, the fishing mortality would be counted against the quota reserve rather than the quota. Similarly, if there was a quota under-harvest, the under-harvest would be added to the quota reserve rather than being added to the quota. Thus, under this alternative, the Atlantic shark fisheries could become more stable because quotas would be less likely to fluctuate from year to year. While this approach may be preferable in the future, NOAA Fisheries feels discussions with the fishermen and public and additional analyses are needed to determine the appropriate level of the reserve and the appropriate uses for such a reserve.

2.5 Seasonal Quota Adjustments

Final Action

Alternative E1 *Count over- and under-harvests of the Federal commercial quotas when setting the Federal commercial quota for the same semi-annual season of the following year (e.g. summer to summer, winter to winter) (No Action)*

This alternative would add any under-harvest to, or remove any over-harvest from, the Federal commercial quota when setting the Federal commercial quota for the same semi-annual season of the following year. For example, if the commercial fishermen land only 90 percent of the quota in the summer semi-annual season, the remaining 10 percent would be added to the next summer semi-annual season. This is the alternative that was finalized in the HMS FMP but was never implemented. This alternative will go into effect if no action is taken.

Alternative Considered but Not Selected at this Time

Alternative E2 *Count over- and under-harvests of the Federal commercial quota when setting the Federal commercial quota for the subsequent semi-annual season (e.g. summer to winter, winter to summer)*

This alternative would add any under-harvest to or remove any over-harvest from the Federal commercial quota when setting the Federal commercial quota for the following semi-annual season. For example, if commercial fishermen land only 90 percent of the quota in the summer semi-annual season, the remaining 10 percent would be added to the next winter semi-annual season. This alternative is how the fishery has been operating since the HMS FMP.

Table 2.1 Commercial landings (mt dw) of LCS from 1999 through 2001. Source: 2002 SAFE report, Cortes and Neer, 2002.

Year	Sandbar	Blacktip and Spinner	Unclassified	Ridgeback LCS (includes unclassified)	Non-ridgeback LCS (includes unclassified)	Total LCS
1999	589.7	584.1	443.8	829.2	852.9	1778.0
2000	676.7	747.7	49.3	727.0	820.3	1684.0
2001	637.0	518.1	336.6	824.0	741.4	1616.0
Total	1,903.4	1,849.8	829.7	2380.2	2,414.6	5,078.0
3 year average	634.5	616.6	276.6	793.4	804.9	1,692.7

Table 2.2 Process for calculating LCS annual quota alternatives.

Alternative	LCS Complex	Ridgeback LCS	Non-Ridgeback LCS
A1	NA	See HMS FMP = 620 mt dw	See HMS FMP = 196 mt dw
A2	50% of 2,570 mt dw (1996 quota level) = 1,285 mt dw	NA	NA
A3	50% of 1,692.7 (3 year average, Table 2.1) = 846 mt dw	NA	NA
A4	NA	+793 mt dw (3 year ridgeback average, Table 2.1) = 793 mt dw	+ 805 mt dw (3 year non-ridgeback average, Table 2.1) + 161 mt dw (20% addition of 3 year average, Table 2.1) = 966 mt dw
A5	NA	+ 634.5 mt dw (sandbar 3 year average, Table 2.1) + 138.3 mt dw (50% of 3 year average of unclassified sharks, Table 2.1) + 10.5 mt dw (50% subtraction of other ridgeback species 3 year average) = 783 mt dw	+ 616.6 mt dw (blacktip and spinner 3 year average, Table 2.1) + 123.3 mt dw (20% addition of blacktip and spinner 3 year average) + 138.3 mt dw (50% of 3 year average of unclassified sharks, Table 2.1) + 27.7 mt dw (20% addition of 138.3 mt dw of unclassified sharks) + 25 mt dw (50% subtraction of other non-ridgeback species 3 year average) = 931 mt dw

Table 2.3 **Commercial landings (mt dw) of SCS from 1999 through 2001.** Source: 2002 SAFE report, Cortes and Neer, 2002.

Year	Atlantic sharpnose	Blacknose	Bonnethead	Finetooth	Total SCS
1999	108.7	59.1	24.4	111.8	305
2000	64.6	80.8	31.5	91.9	269
2001	88.6	73.0	28.6	136.0	326
Total	261.9	212.9	84.4	339.6	900
3 year average	87.3	71.0	28.1	113.2	300

3.0 AFFECTED ENVIRONMENT

Sharks, skates, and rays comprise the subclass Elasmobranchs, and together with chimaeras, comprise the class Chondrichthyes, or cartilaginous fishes. This diverse group of fishes can be distinguished by the possession of a cartilaginous skeleton as opposed to the bony skeleton of the class Osteichthyes, or bony fishes. The great majority of commercially and recreationally important species of chondrichthyans are elasmobranchs. Elasmobranchs are primarily at the top of the food web, often top-level carnivores, and their abundance is relatively small compared to groups in lower trophic levels. The life-history characteristics of many elasmobranchs, such as late age of maturity and relatively slow growth rates, make them more susceptible to overfishing than most bony fishes. Recovery of populations from severe depletions (caused either by natural phenomena or human-induced mortality) can take many years for elasmobranch species.

The information presented here should be considered a summary. Detailed descriptions of the life histories and population status of highly migratory species (HMS) species can be found in the HMS FMP, the 2002 LCS stock assessment and associated papers presented at the shark evaluation workshop, and the 2002 SCS stock assessment.

3.1 Determining the Status of the Stocks

The methods used to determine the status of HMS are fully described in Chapter 3 of the HMS FMP and the technical guidelines for implementing National Standard 1 of the Magnuson-Stevens Act (Restrepo et al. 1998). In summary, a species is considered overfished if the current biomass (B) is less than the minimum stock size threshold. The minimum stock size threshold is determined based on the natural mortality of the stock and the biomass at MSY (B_{MSY}). Overfishing is occurring on a species if the current fishing mortality (F) is greater than the fishing mortality at MSY (F_{MSY}). When one or both of these measures occur, a species is declared overfished and a rebuilding plan is needed within one year.

A species is considered rebuilt when B is greater than B_{MSY} or F is less than F_{MSY} . A species is considered healthy when B is equal to or greater than the biomass at optimum yield (B_{OY}) and F is equal to or less than the fishing mortality at optimum yield (F_{OY}).

3.2 Large Coastal Sharks

The 1993 Atlantic Shark FMP concluded that LCS were overfished, that pelagic sharks and SCS were fully fished, and that stock recovery to levels of the 1970s would be slow due to the relatively low intrinsic rates of increase exhibited by these species. The 2002 LCS stock assessment included additional catch estimates, new biological data, and a number of fishery-independent and fishery-dependent catch rate series. Additionally, the 2002 LCS stock assessment used several stock assessment models, including the model used in the 1992 LCS stock assessment, to estimate the status of LCS stocks and project their future abundance under a variety of future catch levels in waters off the U.S. Atlantic and Gulf of Mexico coasts. The 2002 LCS stock assessment concluded that:

1. The LCS complex as a whole is overfished and overfishing is occurring;
2. Sandbar sharks are no longer overfished although biomass levels have not reached optimum yield (the point at which they would be considered healthy) and that overfishing is occurring; and,
3. Blacktip sharks are healthy and overfishing is not occurring.

Tables 3.1 and 3.2 provide the biomass and fishing mortality estimates used to make these determinations. Because of the large number of models and sensitivity runs presented in the LCS stock assessment, only a few of models and sensitivity runs are summarized in tables 3.1 and 3.2. The particular models were chosen to be consistent with the phase plots presented in figures 71, 73, and 76 of the 2002 LCS stock assessment.

Directed commercial longline fishing vessels currently catch primarily sandbar and blacktip sharks. Sandbar and blacktip sharks make up approximately 60 to 75 percent of the commercial catch (GSAFDF 1996). In 2000 and 2001, sandbar and blacktip sharks made up approximately 84 and 71 percent of the landings, respectively (Cortes and Neer 2002, Table 2.1). In 2000 and 2001, approximately 3 and 21 percent of the landings were reported as unclassified sharks (Cortes and Neer 2002, Table 2.1). The remainder of the catch is comprised mostly of dusky, bull, bignose, tiger, sand tiger, lemon, spinner, scalloped hammerhead and great hammerhead sharks, with catch composition varying by region (GSAFDF 1996, Cortes and Neer 2002). These species are less marketable and are often released, so they are reflected in the overall catch but not the landings. Approximately 84 to 91 percent of LCS came from the southeast region, mainly Louisiana, Florida, and North Carolina, although Texas and South Carolina had a large percentage in 2001 (Cortes and Neer 2002). Observer data indicates that LCS discarded from the fishery accounts for approximately 5.7 percent of the total LCS mortality (Cortes and Neer 2002).

3.3 Small Coastal Sharks

The 1993 Atlantic shark FMP concluded that SCS were fully utilized. In 2002, NOAA Fisheries conducted the first SCS stock assessment since 1992. This stock assessment used additional biological data, improved fisheries statistics, and bycatch estimates from the shrimp trawl fishery. Additionally, the stock assessment used new or extended fishery-dependent and independent catch rate series and several stock assessment models. The stock assessment determined that the SCS complex as a whole, Atlantic sharpnose, bonnethead, and blacknose sharks are not overfished and that overfishing is not occurring (Tables 3.3 and 3.4). The stock assessment also concluded that finetooth sharks are not overfished but that overfishing is occurring (Tables 3.3 and 3.4). Thus, NOAA Fisheries has one year to design a rebuilding plan for finetooth sharks.

Also, in 2002, the Mote Marine Laboratory and the University of Florida conducted a stock assessment for SCS using similar data but different models. The results were similar in that current biomass levels for Atlantic sharpnose, bonnethead, and blacknose were at least 69 percent of the biomass in 1972 while the current biomass level for finetooth sharks was only 9 percent the level in 1972. Both stock assessments note that the data used for finetooth sharks is

not as high a quality as the data used for Atlantic sharpnose due to shorter catch per unit effort (CPUE) and catch series, lack of bycatch estimates, and no catches reported in some years.

Small coastal sharks are targeted in localized fisheries in the southern United States, caught incidentally in other commercial fisheries, and are commonly used for bait. The majority of commercial harvest occurs in the South Atlantic region (57 percent) with gillnets. Finetooth, Atlantic sharpnose, and blacknose sharks comprise most of the commercial landings (34, 24, and 30 percent in 2000, respectively; 42, 27, and 22 percent in 2001, respectively) with bonnethead shark landings less than 12 percent in both 2000 and 2001.

3.4 Protected Species

The June 14, 2001, Biological Opinion on HMS fisheries that analyzed the impacts of shark fisheries on listed marine mammals and sea turtles took into account recent landings and concluded that the southeast gillnet fishery for sharks, the bottom longline fishery, commercial handgear fishery, and rod and reel fisheries may adversely affect but are not likely to jeopardize the continued existence of the right whale, humpback, fin, or sperm whales, or Kemp's ridley, green, loggerhead, hawksbill, or leatherback sea turtles. While the June 14, 2001, Biological Opinion did find that the continued operation of the Atlantic pelagic longline fishery is likely to jeopardize the continued existence of the leatherback and loggerhead sea turtles, pelagic longline gear is generally not used to target LCS or SCS, and NOAA Fisheries has implemented a final rule to implement the Reasonable and Prudent Alternative outlined in the Biological Opinion and is conducting an experiment to test gear modifications that could further reduce sea turtle interactions. NOAA Fisheries has also implemented the Reasonable and Prudent Measures and some of the Terms and Conditions of the BiOp including, but not limited to, continuing bottom longline observer program, requiring net checks in the drift gillnet fishery, and requiring pelagic and bottom longline fishermen to post sea turtle handling and release guidelines.

Interactions with protected species such as whales and sea turtles are infrequently observed in the commercial LCS bottom longline fishery. From 1994 through the first half of 2002, the shark bottom longline observer program has observed 28,598 LCS or approximately 2.2 percent of all LCS landings. During that time and including the rest of 2002, 30 loggerhead sea turtles have been observed: 16 alive, 5 dead, and 9 unknown (Table 3.5). Also, 4 leatherback sea turtles have been observed: 1 dead and 3 unknown (Table 3.5). Additionally, there have been 8 unclassified sea turtles: 1 alive and 7 unknown (Table 3.5). NOAA Fisheries is examining methods of expanding these observed catches in order to estimate the number of protected species caught by the entire fleet. More information regarding takes of protected species can be found in the June 2001 Biological Opinion.

Shark gillnet gear, used to target SCS, can interact with sea turtles and is used in right whale critical habitat during calving season. This fishery has 100 percent observer coverage during right whale calving season and 53 percent observer coverage during the remainder of the year. Further information on marine mammals and sea turtles are provided in Section 5.8 of this document. In addition, interactions with protected species are fully described in the 2002 SAFE report and in observer reports for this fishery.

Table 3.1 **Summary table of the status of the biomass of large coastal sharks.** Sources: 2002 LCS stock assessment; E. Cortes, personal communication; L. Brooks, personal communication. MSC=maximum sustainable catch; SPM=surplus production model; SIR=sampling/importance resampling algorithm; SSSPM =space-state surplus production model; ASPM=age-structured surplus production model; SSLRSG=state-space lagged recruitment, survival, and growth model; SSSPM=state-space surplus production model; CPUE=catch per unit effort. Only models shown in figures 71, 73, and 76 of the 2002 LCS stock assessment are summarized below.

Species	Model	Current Biomass N_{2001}	N_{MSY}	Current Relative Biomass Level N_{2001}/N_{MSY}	Over-fished?	Minimum Biomass Flag $B_{flag} = (1-M)B_{OY}$	Biomass Target $B_{OY} = 125\%B_{MSY}$	MSC (num- bers) ¹	Outlook
Large Coastal Complex	Bayesian SPM using SIR; updated scenario	3,413	4,469	0.77	Yes	Cannot be calculated; M not available for species group	5,586	285	STOCK IS OVERFISHED. $B_{2001} < B_{OY}$ The majority of the models, including the models not summarized here, indicate that the resource is overfished. Even in the models where the resource is not overfished, the rebuilding target (B_{OY}) has not been met.
	Bayesian SPM using SIR; baseline scenario with fishery dependent only	2,940	6,300	0.46	Yes		7,875	249	
	Bayesian SPM using SIR; baseline scenario with fishery independent only	10,156	8,371	1.18	No		10,464	479	
	Bayesian SPM using SIR; baseline scenario	4,315	6,114	0.70	Yes		7,643	315	
	Bayesian SPM using SIR; baseline scenario all indices	4,383	6,063	0.72	Yes		7,579	322	
	Bayesian SPM using SIR; alternative catch scenario	4,099	5,174	0.78	Yes		6,468	322	
	SSSPM; updated scenario	4,811	5,690	0.83	Yes		7,113	379	

Species	Model	Current Biomass N_{2001}	N_{MSY}	Current Relative Biomass Level N_{2001}/N_{MSY}	Over-fished?	Minimum Biomass Flag $B_{flag} = (1-M)B_{OY}$	Biomass Target $B_{OY} = 125\%B_{MSY}$	MSC (num- bers) ¹	Outlook
	SSSPM; baseline scenario	5,695	7,518	0.74	Yes		9,398	402	
Sandbar	ASPM; updated scenario	2.77 E8	8.33 E11	3.32 E-4	Yes	8.57 E11	1.04 E12	5.89 E11	<p>STOCK IS NOT OVERFISHED; REBUILDING IS STILL NEEDED. $B_{2001} < B_{OY}$</p> <p>The models have conflicting results. These conflicts are due, in part, to the sensitivity of certain models to catch or CPUE series. The Bayesian SPM models and SSLRSG models appear to correspond with each other, have good convergence², and fit well with CPUE data. These models generally indicate that the biomass is at or above B_{MSY} levels and below B_{OY} levels.</p>
	ASPM; updated scenario with fishery dependent only	4.48 E5	6.78 E5	0.66	Yes	7.32 E5	8.48 E5	6.26 E5	
	ASPM; updated scenario with fishery independent only	4.86 E8	1.50 E12	3.25 E-4	Yes	1.56 E12	1.88 E12	1.49 E12	
	ASPM; baseline scenario	1.70 E6	1.24 E6	1.38	No	1.34 E6	1.55 E6	1.16 E6	
	ASPM; baseline scenario with fishery independent only	2.53 E6	1.50 E6	1.68	No	1.60 E6	1.88 E6	3.33	
	Bayesian SPM using SIR; updated	1,402	1,509	1.00	No	Model does not calculate M	1,886	110	
	Bayesian SPM using SIR; baseline scenario with fishery dependent	2,013	1,890	1.05	No		2,363	110	
	Bayesian SPM using SIR; baseline scenario with fishery independent	1,722	1,673	1.03	No		2,091	104	
	Bayesian SPM using SIR; baseline scenario	1,428	1,436	1.01	No		1,795	105	

Species	Model	Current Biomass N_{2001}	N_{MSY}	Current Relative Biomass Level N_{2001}/N_{MSY}	Over-fished?	Minimum Biomass Flag $B_{flag} = (1-M)B_{OY}$	Biomass Target $B_{OY} = 125\%B_{MSY}$	MSC (num- bers) ¹	Outlook
	Bayesian SPM using SIR; baseline scenario all indices	1,027	1,338	0.77	Yes		1,673	92	
	SSLRSG; updated scenario	2,588	1,135	2.22	No		1,419	142	
	SSLRSG; baseline scenario	1,631	786	2.22	No		983	129	
Blacktip	ASPM; updated scenario	1.76 E6	1.92 E6	0.91	Yes	1.92 E6	2.40 E6	1.80 E6	STOCK IS NOT OVERFISHED AND IS REBUILT. $B_{2001} > B_{OY}$ The majority of the models indicate that biomass levels exceed B_{MSY} and B_{OY} . Some of the models that were very optimistic had difficulty converging. The other models were sensitive to the catch series.
	ASPM; updated scenario with fishery dependent only	1.35 E6	1.71 E6	0.79	Yes	1.72 E6	2.14 E6	1.68 E6	
	ASPM; updated scenario with fishery independent only	2.80 E6	2.64 E6	1.06	No	2.59 E6	3.30 E6	1.87 E6	
	ASPM; baseline scenario	3.16 E7	1.90 E7	1.66	No	1.85 E7	2.38 E7	1.14 E7	
	Bayesian SPM using SIR; updated	8,034	5,417	1.45	No	Model does not calculate M	6,771	426	
	Bayesian SPM using SIR; baseline scenario with fishery dependent	6,399	4,792	1.31	No		5,990	355	
	Bayesian SPM using SIR; baseline scenario with fishery independent	6,230	4,593	1.33	No		5,741	378	

Species	Model	Current Biomass N_{2001}	N_{MSY}	Current Relative Biomass Level N_{2001}/N_{MSY}	Over-fished?	Minimum Biomass Flag $B_{flag} = (1-M)B_{OY}$	Biomass Target $B_{OY} = 125\%B_{MSY}$	MSC (num- bers) ¹	Outlook
	Bayesian SPM using SIR; baseline scenario	6,650	4,815	1.36	No		6,019	378	
	Bayesian SPM using SIR; baseline scenario all indices	5,922	4,761	1.20	No		5,951	312	
	SSSPM; updated scenario	5,587	3,430	1.36	No		4,288	428	
	SSSPM; baseline scenario	6,585	4,193	1.35	No		5,241	445	

1. MSC for age structures models is in biomass, not numbers.
2. Convergence indicates that the algorithm has become stable and come to an optimal solution.

Table 3.2 **Summary table of the status of the fishing mortality on large coastal sharks.** Sources: 2002 LCS stock assessment; E. Cortes, personal communication. SPM=surplus production model; SIR=sampling/importance resampling algorithm; SSSPM =space-state surplus production model; ASPM=age-structured surplus production model; SSLRSG=state-space lagged recruitment, survival, and growth model; SSSPM=state-space surplus production model. Only models shown in figures 71, 73, and 76 of the 2002 LCS stock assessment are summarized below.

Species	Model	Current F F_{2001}	Maximum Fishing Mortality Threshold $MFFT = F_{MSY}$	Current Relative Fishing Mortality Rate F_{2001}/F_{MSY}	Over- fishing?	Fishing Mortality Target $F_{OY} = 0.75F_{MSY}$	Outlook
Large Coastal Complex	Bayesian SPM; updated scenario	0.13	0.08	1.53	Yes	0.06	OVERFISHING $F_{2001} > F_{OY}$ The majority of the models indicate that current F levels exceed F_{MSY} .
	Bayesian SPM; baseline scenario with fishery dependent only	0.21	0.05	4.48	Yes	0.04	
	Bayesian SPM; baseline scenario with fishery independent only	0.07	0.07	0.89	No	0.06	
	Bayesian SPM; baseline scenario	0.13	0.06	2.03	Yes	0.05	
	Bayesian SPM; baseline scenario all indices	0.13	0.07	1.92	Yes	0.05	
	Bayesian SPM; alternative catch scenario	0.11	0.07	1.49	Yes	0.05	
	SSSPM; updated scenario	0.10	0.10	1.01	Yes	0.08	
	SSSPM; baseline scenario	0.10	0.07	1.40	Yes	0.05	

Species	Model	Current F F_{2001}	Maximum Fishing Mortality Threshold $MFFT = F_{MSY}$	Current Relative Fishing Mortality Rate F_{2001}/F_{MSY}	Over-fishing?	Fishing Mortality Target $F_{OY} = 0.75F_{MSY}$	Outlook
Sandbar	ASPM; updated scenario	0.0002	0.05	0.0041	No	0.03	OVERFISHING $F_{2001} > F_{OY}$ The majority of the models indicate the overfishing is occurring. Most of the models that indicate overfishing also indicated that biomass levels are at or above MSY.
	ASPM; updated scenario with fishery dependent only	0.20	0.08	2.45	Yes	0.06	
	ASPM; updated scenario with fishery independent only	0.00010	0.06	0.00156	No	0.05	
	ASPM; baseline scenario	0.08	0.09	0.87	No	0.07	
	ASPM; baseline scenario with fishery independent only	0.05	0.08	0.65	No	0.06	
	Bayesian SPM; updated scenario	0.12	0.11	1.08	Yes	0.08	
	Bayesian SPM; baseline scenario with fishery dependent	0.10	0.07	1.51	Yes	0.05	
	Bayesian SPM; baseline scenario with fishery independent	0.10	0.08	1.24	Yes	0.06	
	Bayesian SPM; baseline scenario	0.11	0.10	1.16	Yes	0.07	
	Bayesian SPM; baseline scenario all indices	0.15	0.09	1.68	Yes	0.07	

Species	Model	Current F F_{2001}	Maximum Fishing Mortality Threshold $MFFT = F_{MSY}$	Current Relative Fishing Mortality Rate F_{2001}/F_{MSY}	Over-fishing?	Fishing Mortality Target $F_{OY} = 0.75F_{MSY}$	Outlook
	SSLRSG; updated scenario	0.68	0.45	1.51	Yes	0.34	
	SSLRSG; baseline scenario	0.70	0.46	1.53	Yes	0.34	
Blacktip	ASPM; updated scenario	0.16	0.12	1.39	Yes	0.09	<p>NOT OVERFISHING $F_{2001} < F_{OY}$</p> <p>The majority of the models indicate that current fishing rates are below F_{OY}. Most of these models are the same models that indicate biomass levels are above B_{MSY}.</p>
	ASPM; updated scenario with fishery dependent only	0.21	0.12	1.72	Yes	0.09	
	ASPM; updated scenario with fishery independent only	0.09	0.08	1.16	Yes	0.06	
	ASPM; baseline scenario	0.01	0.06	0.13	No	0.04	
	Bayesian SPM; updated	0.04	0.09	0.48	No	0.07	
	Bayesian SPM; baseline scenario with fishery dependent	0.05	0.08	0.62	No	0.06	
	Bayesian SPM; baseline scenario with fishery independent	0.06	0.09	0.64	No	0.07	
	Bayesian SPM; baseline scenario	0.04	0.09	0.52	No	0.07	
	Bayesian SPM; baseline scenario all indices	0.06	0.07	0.82	No	0.05	

Species	Model	Current F F_{2001}	Maximum Fishing Mortality Threshold $MFFT = F_{MSY}$	Current Relative Fishing Mortality Rate F_{2001}/F_{MSY}	Over-fishing?	Fishing Mortality Target $F_{OY} = 0.75F_{MSY}$	Outlook
	SSSPM; updated scenario	0.08	0.18	0.44	No	0.14	
	SSSPM; baseline scenario	0.06	0.14	0.42	No	0.10	

Table 3.3 **Summary table of the status of the biomass of small coastal sharks.** Sources: 2002 SCS stock assessment; E. Cortes, personal communication.
LRSG=lagged recruitment, survival, and growth model; SPM=surplus production model.

Species	Model	Current Biomass B_{2001}	B_{MSY}	Current Relative Biomass Level B_{2001}/B_{MSY}	Over-fished?	Minimum Stock Size Threshold $MSST = (1-M)B_{MSY}$ if $M < 0.5$ $MSST = 0.5 B_{MSY}$ if $M \geq 0.5$	Minimum Biomass Flag $B_{flag} = (1-M)B_{OY}$	Biomass Target $B_{OY} = 125\%B_{MSY}$	MSY	Outlook
Sharnose	Bayesian LRSG using Gibbs sampler	72.7	23	3.16	No	11.5 to 17.8	9.0 to 22.2	28.75	7.8 mill lb dw (3,538 mt dw)	Stock not overfished $B_{2001} > B_{OY}$
	Bayesian SPM using Gibbs sampler	73.2	43.3	1.69	No	21.6 to 33.4	16.9 to 41.8	54.12	1.9 mill lb dw (862 mt dw)	
Bonnethead	Bayesian LRSG using Gibbs sampler	12.8	4.6	2.78	No	2.3 to 3.7	0.8 to 4.6	5.75	1.8 mill lb dw (816.5 mt dw)	Stock not overfished $B_{2001} > B_{OY}$
	Bayesian SPM using Gibbs sampler	13.4	9.2	1.46	No	4.6 to 7.3	1.5 to 9.2	11.50	0.5 mill lb dw (227 mt dw)	
Blacknose	Bayesian LRSG using Gibbs sampler	10.4	3.3	3.15	No	1.6 to 2.7	2.0 to 3.4	4.12	0.8 mill lb dw (363 mt dw)	Stock not overfished $B_{2001} > B_{OY}$
	Bayesian SPM using Gibbs sampler	10.4	5.4	1.92	No	2.7 to 4.5	3.3 to 5.6	6.75	0.2 mill lb dw (91 mt dw)	
Finetooth	Bayesian LRSG using Gibbs sampler	1.9	0.8	2.37	No	0.4 to 0.7	0.5 to 0.8	1.00	0.26 mill lb dw (118 mt dw)	Stock not overfished $B_{2001} > B_{OY}$

	Bayesian SPM using Gibbs sampler	2.3	1.65	1.39	No	0.8 to 1.4	1.0 to 1.7	2.06	0.05 mill lb dw (23 mt dw)	
SCS aggregate	Bayesian LRSG using Gibbs sampler	77.1	32.3	2.39	No	16.2 to 26.7	12.4 to 35.4	40.38	7.0 mill lb dw (3,175 mt dw)	Stock not overfished $B_{20010} > B_{OY}$
	Bayesian SPM using Gibbs sampler	83.8	60.75	1.38	No	30.4 to 50.2	23.3 to 62.7	75.94	2.2 mill lb dw (998 mt dw)	

Table 3.4 **Summary table of the status of the biomass of small coastal sharks.** Sources: 2002 SCS stock assessment; E. Cortes, personal communication.
LRSG=lagged recruitment, survival, and growth; SPM=surplus production model.

Species	Model	Current F F ₂₀₀₀	Maximum Fishing Mortality Threshold MFFT = F _{MSY}	Current Relative fishing Mortality Rate F ₂₀₀₀ /F _{MSY}	Over- fishing?	Fishing Mortality Target F _{OY} = 0.75F _{MSY}	Management Measures to Reduce Fishing Mortality Required? F ₂₀₀₀ > F _{OY}	Outlook
Sharnose	Bayesian LRSG using Gibbs sampler	0.06	0.42	0.14	No	0.31	No	Not overfishing
	Bayesian SPM using Gibbs sampler	0.02	0.04	0.42	No	0.03	No	
Bonnethead	Bayesian LRSG using Gibbs sampler	0.18	0.53	0.35	No	0.40	No	Not overfishing
	Bayesian SPM using Gibbs sampler	0.03	0.05	0.56	No	0.04	No	
Blacknose	Bayesian LRSG using Gibbs sampler	0.19	0.32	0.61	No	0.24	No	Not overfishing
	Bayesian SPM using Gibbs sampler	0.02	0.03	0.65	No	0.02	No	
Finetooth	Bayesian LRSG using Gibbs sampler	1.50	0.44	3.42	YES	0.33	YES	OVERFISHING
	Bayesian SPM using Gibbs sampler	0.13	0.03	4.13	YES	0.02	YES	
SCS aggregate	Bayesian LRSG using Gibbs sampler	0.24	0.28	0.24	No	0.21	YES	Not overfishing but F ₂₀₀₀ >= F _{OY}
	Bayesian SPM using Gibbs sampler	0.03	0.04	0.78	No	0.03	No	

Table 3.5 **The number of LCS and sea turtles observed in the shark bottom longline observer program.** Source: Alexia Morgan, personal communication.

Year	LCS*	Loggerhead sea turtles				Leatherback sea turtles				Unknown sea turtles			
		Alive	Dead	Unknown	Total	Alive	Dead	Unknown	Total	Alive	Dead	Unknown	Total
1994	2,777	0	0	5	5	0	0	1	1	0	0	6	6
1995	4,989	3	1	0	4	0	0	0	0	0	0	1	1
1996	3,835	3	2	1	6	0	0	1	1	0	0	0	0
1997	2,584	3	0	2	5	0	0	1	1	0	0	0	0
1998	4,742	1	1	0	2	0	0	0	0	1	0	0	1
1999	3,171	2	0	0	2	0	0	0	0	0	0	0	0
2000	1,052	0	0	0	0	0	0	0	0	0	0	0	0
2001	4,319	2	0	0	2	0	1	0	1	0	0	0	0
2002*	1,129	2	1	1	4	0	0	0	0	0	0	0	0
Total	28,598	16	5	9	30	0	1	3	4	1	0	7	8

*LCS numbers for 2002 only include observations from the January 1- June 30 season. Sea turtle numbers are complete for both 2002 semi-annual seasons.

4.0 DESCRIPTION OF ATLANTIC SHARK FISHERIES

Commercial fishermen use a number of gear types to target sharks, including bottom longline, pelagic longline, gillnet, and rod and reel. Different gear types can be used to target different species of sharks. For example, bottom longline gear is generally used to target LCS while pelagic longline gear is used to target pelagic sharks. Other gear types such as shrimp trawls catch sharks incidentally. All of these gears catch many species of fish; some of those captured are marketable and thus are retained, while others are discarded for economic or regulatory reasons. Species encountered are snappers, groupers, red drum, cobia/dolphin, swordfish, tunas, billfish, wahoo, king and Spanish mackerel, little tunny, crevalle jack, and other finfish species. Sometimes fishermen also catch sea turtles, marine mammals, and sea birds, known collectively as “protected” species. All of these species are Federally managed, and NOAA Fisheries seeks to control the mortality that results from fishing effort. NOAA Fisheries also seeks to control the likelihood of mortality, injury, or other forms of take of protected species.

Below is a brief description of Atlantic shark fisheries. Please refer to section 2.4 and 2.5 of the HMS FMP and section 4.5 of the 2002 SAFE report for more detailed descriptions. Additional information specific to the pelagic longline fishery can be found in the Final Supplemental Environmental Impact Statement for the Reduction of Bycatch, Bycatch Mortality, and Incidental Catch in the Atlantic Pelagic Longline Fishery and in the Environmental Assessment and Regulatory Impact Review to Reduce Sea Turtle Bycatch and Bycatch Mortality in the Atlantic Pelagic Longline Fishery or in the June 14, 2001, Biological Opinion.

4.1 Bottom Longline Fishery

The Atlantic bottom longline fishery targets LCS, with landings dominated by sandbar and blacktip sharks (Cortes and Neer 2002). Gear characteristics vary slightly by region, but in general, a ten-mile long monofilament bottom longline, containing about 750 hooks, is fished overnight. Skates, sharks, or various finfishes are used as bait (GSAFDF, 1997). The gear typically consists of a heavy monofilament mainline with lighter weight monofilament gangions. Some fishermen may occasionally use a flexible 1/16 inch wire rope as gangion material or as a short leader above the hook.

Commercial shark fishing effort with bottom longline gear is concentrated in the southeastern United States and Gulf of Mexico. McHugh and Murray (1997) found in a survey of shark fishery participants that the largest concentration of bottom longline fishing vessels is found along the central Gulf coast of Florida, with the John’s Pass - Madeira Beach area considered the center of directed shark fishing activities. Average bottom longline sets generally last between 10.1 and 14.9 hours, with longer sets typical of the North Carolina and Florida Gulf fisheries and shorter sets typical of the South Carolina/Georgia fishery (GSAFDF, 1997). As with all HMS fisheries, some shark fishery participants move from their home ports to active fishing areas as the seasons change.

4.2 Pelagic Longline Fishery

The U.S. pelagic longline fishery for Atlantic HMS primarily targets swordfish, yellowfin tuna, or bigeye tuna in various areas and seasons and catches sharks incidentally. Although this gear can be modified (i.e., depth of set, hook type, etc.) to target swordfish, tuna or sharks, like other hook and line fisheries, it is a multi-species fishery. Longline gear sometimes attracts and hooks non-target finfish with no commercial value, as well as species that cannot be retained by commercial fishermen, such as billfish or some species of sharks. Pelagic longlines may also interact with protected species such as marine mammals, sea turtles and sea birds.

Pelagic longline gear is composed of several parts. The primary mainline can vary from five to 40 miles in length, with approximately 20 to 30 hooks per mile. The depth of the mainline is determined by ocean currents and the length of the floatline, which connects the mainline to several buoys and periodic markers with radar reflectors and radio beacons. Lightsticks, which contain chemicals that emit a glowing light, are often used to attract bait fish which may, in turn, attract pelagic predators. When targeting swordfish, the lines generally are deployed at sunset and hauled in at sunrise to take advantage of the nocturnal near-surface feeding habits of the large pelagic species (Berkeley *et al.*, 1981). In general, longlines targeting tuna are set in the morning, deeper in the water column, and hauled in the evening. Except for vessels of the distant water fleet which undertake extended trips, fishing vessels preferentially target swordfish during periods when the moon is full to take advantage of increased densities of pelagic species near the surface.

Several species of large coastal (dusky, silky, hammerhead, and night) and pelagic sharks (mako, thresher, porbeagle and blue) are caught in pelagic longline fisheries; some are retained due to high fin and meat market value, others are reported as discarded (dead or alive). Approximately 132 mt whole weight (ww) of LCS (hammerheads, night, silky, unidentified, and dusky sharks) and 154 mt ww of pelagic sharks (primarily blue sharks) were discarded dead in pelagic longline fisheries in 2001 (Cramer 2002). Between 1996 and 1998, approximately 15,600 LCS were discarded dead by pelagic longline vessels (Cortes and Neer 2002).

4.3 Gillnet Fishery

The southeast shark gillnet fishery is comprised of about 6 vessels that used nets typically 91 to 2,736 meters long and 3 to 14 meters deep, with stretched mesh from 12.7 to 24.4 cm (Carlson and Baremore, 2001). The entire process (time net was first set minus the time the haulback was completed) averaged 9.0 hours in 2001 (Carlson and Baremore, 2001). A total of 37 drift gillnet sets were observed from April to October in 2000 and 2001 combined. The observed drift gillnet catch consisted of 10 shark species (Atlantic sharpnose, blacknose, and blacktip comprised 97 percent of the catch), 25 teleosts and rays, and 1 species of sea turtle (Carlson and Baremore, 2001). Shark fishermen also use gillnet gear in a strikenet fashion. This can be done with a small second vessel actively setting the net around a school of sharks or the drift gillnet vessel actively setting the net in the wake of a shrimp vessel. Vessels fishing in a strikenet fashion used nets between 46 and 730 meters long, 9 and 24 meters deep, and with mesh sizes 23 to 25 cm (Carlson and Baremore, 2001). A total of eight strikenet sets were observed in August to September 2000 and 2001 combined. Four species of shark (blacknose, blacktip, spinner, and

finetooth) and one species of ray was observed caught (Carlson and Baremore, 2001). Legislation in South Carolina, Georgia, and Florida has prohibited the use of commercial gillnets in state waters, thereby forcing some of these vessels into deeper waters under Federal jurisdiction, where gillnets are less effective.

5.0 ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES CONSIDERED

All of the alternatives described in this document would only apply to fishermen on vessels that have been issued Federal Atlantic limited access shark permits.

5.1 LCS Commercial Annual Quota Levels

As described in section 2, the alternatives considered for LCS commercial annual quota levels are:

- A1* 783 mt dw annually for ridgeback LCS and 931 mt dw annually for non-ridgeback LCS,
- A2* 620 mt dw annually for ridgeback LCS and 196 mt dw annually for non-ridgeback LCS,
- A3* 1,285 mt dw annually for the entire LCS complex,
- A4* 846 mt dw for the entire LCS complex and,
- A5* 793 mt dw annually for ridgeback LCS and 966 mt dw annually for non-ridgeback LCS.

Alternative A1 is the final action.

Ecological Impacts

The final action, A1, will establish an annual quota of 783 mt dw for ridgeback LCS and 931 mt dw for non-ridgeback LCS. As described in section 2.1, these levels are based on the recommendations of the 2002 LCS stock assessment regarding the LCS complex, sandbar sharks, and blacktip sharks and on current landings reported by all U.S. commercial fishermen, including fishermen in state waters (Tables 2.1 and 2.2). As described in table 2.2, these quotas keep sandbar shark allowable landings at the average of recent levels, increase the allowable landings level of blacktip sharks, and decrease the allowable landings level of all other species. These quota levels begin to split the LCS complex into more distinct species groups. Both the 1998 and 2002 LCS stock assessments have suggested that management measures should be species-specific because different species are responding differently to exploitation. While NOAA Fisheries does have some concerns that have yet to be addressed regarding species identification and enforcement of species-specific quotas, those concerns should not be a problem under this alternative. As described in the HMS FMP, the inter-dorsal ridge is easily identified even after a fish has been headed, gutted, and finned. Thus, the inter-dorsal ridge is useful as a diagnostic characteristic for management and enforcement purposes and can conform with the species-specific management suggestion.

Alternative A2, the no action alternative, would implement the management measures that were finalized in the HMS FMP based on the projections of the sandbar and blacktip models in the 1998 LCS stock assessment. While NOAA Fisheries felt these quota levels were appropriate in 1999, given the peer reviews and the results of the 2002 LCS stock assessment, these quota levels are no longer appropriate. The results of the 2002 LCS stock assessment indicate that blacktip sharks are fully rebuilt; therefore a reduction of the magnitude of the quota under this alternative would be unnecessary. Likewise, the 2002 LCS stock assessment also indicates that while overfishing is still occurring, sandbar sharks are no longer overfished and that further reductions are not necessary at this time to rebuild the biomass to optimum yield. While the

2002 LCS stock assessment does indicate that the complex as a whole is overfished and that reductions are needed to help the complex rebuild, the 2002 LCS stock assessment also indicates that these results are due to species in the complex other than sandbar and blacktip.

Alternative A3, 1,285 mt dw for all LCS, would implement the quota level that has been in place since 1997. This level was set based on the results of the 1996 LCS stock assessment and does not consider the results of the 2002 LCS stock assessment nor current landings levels.

Alternative A4 would implement a quota level of 846 mt dw annually for all LCS that is 50 percent of the average landings reported by all commercial fishermen in the past three years (Table 2.1). This level is based on the result in the 2002 LCS stock assessment that the LCS complex could be rebuilt to MSY levels in 10 years if catch is reduced by 50 percent. However, unlike the final action, this alternative does not consider the results for sandbar and blacktip sharks nor does it consider the recommendation that the LCS complex be managed on a more species-specific level because the species are responding differently to exploitation. Thus, NOAA Fisheries does not feel it is as appropriate as alternative A1.

Alternative A5 would implement quota levels of 793 mt dw for ridgeback LCS and 966 mt dw for non-ridgeback LCS. These quota levels are based on current ridgeback and non-ridgeback landings levels and the results of the 2002 LCS stock assessment regarding sandbar and blacktip sharks (Table 2.2). However, this alternative does not take into account the result that the complex as a whole needs reductions in order to rebuild or that different species are responding to exploitation differently. Thus, NOAA Fisheries does not feel this alternative is as preferable as alternative A1.

NOAA Fisheries does not believe that any of the LCS quota alternatives would cause fishermen to alter fishing practices in terms of the type of gear used or the areas fished. Additionally, while alternatives A1 and A5 increase the annual quota that has been in place for LCS from 1,285 mt dw (A3) to 1,759 mt dw (A5) or 1,714 mt dw (A1), NOAA Fisheries does not expect this increase to result in fishermen increasing fishing effort. From 1999 to 2001, the average LCS for *all* commercial fishermen, including fishermen fishing in state waters, has been 1,693 mt dw and has ranged from 1,616 to 1,778 mt dw (Table 2.1). Because a number of states now close with the closure of Federal waters and because state landings are considered in LCS quota monitoring, NOAA Fisheries does not expect either alternative A1 or A5 to result in an increase in LCS landings or effort to catch sharks or an increase in non-target finfish impacts.

Additionally, when these alternatives are combined with the final actions D1 (count all mortality against the Federal quota) and E1 (season-specific quota adjustments), any landings of LCS in state waters after the Federal closure or any dead discards would be counted against the commercial quota the following year, keeping fishing effort at similar levels from year to year. Thus, neither A1 nor A5, especially in combination with D1 and E1, should increase the take of LCS or other targeted or incidentally caught species.

Alternatives A2 (HMS FMP quotas) and A4 (846 mt dw for all LCS) would reduce the commercial quota and LCS landings and could reduce the fishing effort and catch of non-target finfish species. Additionally, if A2 or A4 were combined with D1 (count all mortality against

the Federal quota) and E1 (season-specific quota adjustments) it is likely, because the Federal season would be short compared to previous years and fishermen, once the season is closed, would be forced to discard any shark caught, that the commercial quota would be further reduced each year.

Because alternative A3 (1,285 mt dw for all LCS) has been in place since 1997, continuation of this quota level would be unlikely to result in a change in fishing practices, effort levels, LCS and non-target finfish landings, or protected species interactions.

The take of protected species is infrequently observed in the LCS fishery, which is primarily a bottom longline fishery. Since 1994, the shark bottom longline observer program has observed over 28,000 LCS or over 2 percent of all the LCS landed commercially each year. In the same amount of time, 30 loggerhead sea turtles, 4 leatherback sea turtles, and 8 unknown sea turtles have been observed taken (Table 3.5). Because fishing effort is not expected to increase or decrease as a result of any of the alternatives, the number of protected species interactions is not expected to change.

Social and Economic Impacts

Under alternative A3 (1,285 mt dw for all LCS), the profit of many shark fishermen has been marginalized and many fishermen have been unable to rely solely on shark fishing due to short seasons (the fishery has generally been open for three months in the winter and two in the summer) and the lapse of a market (many dealers do not want to pay high prices for shark meat when they can only have it for a few months every year). Thus, as a result of A3, many shark fishermen have gone out of business or left the fishery. The fishermen who are left often fish for different species once the shark season is closed. Maintaining this alternative would not result in significant changes from current levels to either the fishermen or the communities that rely on them.

Under alternatives A2 (the HMS FMP quota) and A4 (846 mt dw for all LCS), due to the quota level decrease, it is likely that many fishermen, particularly the few fishermen who still rely on sharks as a main source of income, would be unable to remain in business. Not only would a decrease in the quota shorten the season but it could also result in even lower ex-vessel prices because dealers might be unable to find buyers for shark meat. In combination with alternatives D1 (count all fishing mortality against the Federal quota) and E1 (season-specific quota adjustments), it is possible that under A2 and A4, the shark fishery would become purely an incidental fishery where fishermen would target other species and would only land sharks if they happened to catch them when the season was open. Additionally, a smaller quota and the resulting shorter season could make many fishermen fish in dangerous weather or in unsafe conditions because they would feel they need to “race” to the fish. Thus, implementation of either of these alternatives could result in negative impacts in the short term both to individual fishermen and the communities that rely on them.

Under alternatives A1 (783 mt dw for ridgeback and 931 mt dw for non-ridgeback LCS) and A5 (793 mt dw for ridgeback and 966 mt dw for non-ridgeback LCS), it is likely that the same market conditions that have existed since 1997 would remain the same in the short term and may

improve slightly over the long term. Because the quota levels under A1 and A5 are based on current landings levels, the number of sharks landed is unlikely to increase. However, because these quota levels should still allow for biomass levels to continue to increase, it is possible that less effort could catch more sharks. This would lead to a higher profit level for shark fishermen and a greater demand for shark limited access permits.

Conclusion

Alternative A1 is the final action because, in combination with the other final actions, it is:

1. Not expected to change fishing effort and current LCS landings, and consequently, is not expected to result in increased bycatch of sea turtles or other species;
2. Expected to lengthen the season slightly and therefore is not expected to cause fishermen to fish in unsafe conditions;
3. Based on the results of the 2002 LCS stock assessment, and consequently, should help increase biomass levels of LCS; and,
4. Not expected to put fishermen or dealers out of business and may result in a slight increase in profit.

5.2 Commercial LCS Size Limits

As described in section 2, the alternatives considered for commercial LCS size limits are:

- B1* No minimum size limit for ridgeback or non-ridgeback LCS and,
B2 4.5 feet fork length for ridgeback LCS and no size limit for non-ridgeback LCS.

Alternative B1, the final action, will not place a minimum size on any LCS while alternative B2 would place a 4.5 ft minimum size on ridgeback LCS. Alternative B2 was finalized in the HMS FMP to reduce fishing mortality on juvenile and subadult sharks, particularly sandbar sharks. The 4.5 ft minimum size is based on the age of first maturity for sandbar sharks. Alternative B2 has never been implemented.

Ecological Impacts

Both the 1998 and 2002 LCS stock assessments indicate that population growth is particularly sensitive to fishing mortality on juvenile and subadult sharks. A minimum size could help prevent the mortality of these important life stages. However, as described in the HMS FMP, minimum size restrictions can also increase dead discards if fishermen fish in areas where many small sharks are found and, those that do not survive the capture experience, are released dead. If fishermen are discarding many fish, they may increase effort in a trip in order to bring in more sharks. While this increase in effort would be accounted for the following year via landings adjustments (under alternatives D1, counting all fishing mortality against the Federal quota, and E1, season-specific adjustments), it would still result in a number of dead fish being discarded in the short term and could result in an increase of bycatch and sea turtle interactions.

Based on the results in the 2002 LCS stock assessment that indicate that sandbar sharks are recovering, this minimum size, which results in discarding of dead fish or bycatch, may not be necessary to rebuild this species to optimum yield and stop overfishing. Additionally, while the 1998 LCS stock assessment gave a suggestion for a minimum size, the 2002 LCS stock assessment does not provide a suggestion and does not indicate which species could benefit the most from a minimum size.

As described in the HMS FMP, some species of ridgeback LCS segregate by size and water depth. For example, large sandbar sharks are often found further offshore and in deeper water than small juvenile sharks. For this reason, implementation of a minimum size could force fishermen to fish further offshore in order to catch fish that meet the minimum size requirement. However, except for impacts on the shark stocks, moving the area of fishing from nearshore to offshore is not expected to have any ecological impacts because fishermen would be fishing in the same manner and with the same gear in either location.

Implementation of alternative B1, with or without the other final actions, is not expected to change fishing practices, fishing effort, or LCS landings. Thus, alternative B1 is not expected to increase bycatch levels for non-target finfish or protected species.

Social and Economic Impacts

As described in the HMS FMP, the implementation of a minimum size on ridgeback LCS (B2) could increase the cost of fishing because, to avoid smaller ridgeback LCS, fishermen would have to fish farther offshore which requires more fuel, groceries, and time. An alternative for fishermen who cannot fish farther out would be to set additional gear inshore. However, in order to land as much fish, the fisherman would have to set more gear (i.e., to increase effort) which would require additional bait and fuel. Thus, alternative B2 could have negative economic impacts on fishermen.

Implementation of alternative B2, however, could increase the ex-vessel price for the fish that are landed because these fish will have more meat and have larger fins. This increase in ex-vessel price might offset some of the increased fishing costs.

Additionally, under alternative B2, if fishermen decide to fish farther offshore, captains and crew could be at sea for longer periods of time. This could result in increased stress in families and an increased safety risk. Thus, alternative B2 could have negative social impacts, beyond economic, for communities that rely on the fishermen.

Under alternative B1, with or without the other final actions, social and economic costs are not expected to change.

Conclusion

Thus, because of the potential negative ecological, economic, and social impacts, NOAA Fisheries does not feel that, with the other final actions, implementation of a minimum size is appropriate at this time. However, NOAA Fisheries will re-evaluate this issue and any

additional information available on minimum sizes, species identification concerns, and mortality of released sharks in the FMP amendment.

5.3 SCS Commercial Annual Quota Levels

As described in section 2, the alternatives considered for SCS commercial annual quota levels are:

- C1 326 mt dw annually for the SCS complex,*
- C2 359 mt dw annually for the SCS complex,*
- C3 1,760 mt dw annually for the SCS complex and,*
- C4 300 mt dw annually for the SCS complex.*

Alternative C1 is the final action.

Ecological Impacts

The final action, C1 (326 mt dw), will cap SCS landings at the highest level of landings by U.S. commercial fishermen including fishermen fishing in state waters (Table 2.3). This alternative is a small reduction from alternative C2, which was finalized in the HMS FMP, and a large reduction from alternative C3, which is the quota level that has been in place since 1997.

Alternative C2 (359 mt dw) was finalized in the HMS FMP and, based on the landings information at that time, was designed to restrict expansion into this fishery from the LCS fishery. Alternative C3 (1,760 mt dw) is the quota level that has been in place since 1997 and is based on the results of the 1992 stock assessment. Neither alternative considers the result of the 2002 SCS stock assessment that indicates that the SCS complex as a whole is healthy, but that overfishing is occurring on finetooth sharks. Instead, both alternatives were derived on the assumption that all SCS were fully fished, not overfished. Because of this change in status, NOAA Fisheries does not feel it is appropriate to allow for the increase in fishing mortality on SCS that could occur under both alternatives C2 and C3.

Alternative C4 (300 mt dw) would result in a smaller quota level than alternative C3 and is based on the average SCS landings by U.S. commercial fishermen in recent years. This alternative could result in discards of SCS, both of finetooth sharks and healthy SCS, if the fishery is closed (the SCS commercial fishery has never been closed due to the commercial quota being exceeded).

SCS are generally targeted by commercial shark fishermen on the southeast coast using gillnets. While some of these fishermen let the gillnet drift, other fishermen use the gillnet as a strikenet and target specific schools of fish. None of these quota alternatives are expected to cause fishermen to change fishing practices, effort, or SCS landings or to change interaction rates with bycatch species.

NOAA Fisheries is considering these quota alternatives in order to reduce or maintain fishing mortality of finetooth sharks until a rebuilding plan can be implemented. The 2002 SCS stock

assessment indicates that most finetooth sharks are caught in the South Atlantic in gillnets. However, the southeast shark gillnet observer program data cannot account for the number of finetooth sharks that are reported landed commercially (Table 5.1). Thus, at this time, NOAA Fisheries is uncertain exactly which South Atlantic gillnet fishery is reporting landings of finetooth sharks or if the fishermen landing finetooth sharks are targeting them or are landing them incidentally. Until NOAA Fisheries can fully explore this issue, it is not appropriate to implement more restrictive measures such as implementing time/area closures or gear restrictions because those measures could cause further mortality to finetooth sharks or may result in additional discards of other species.

Social and Economic Impacts

As described in the section 6 of this document, SCS fishermen do not make large profits and any reduction in these profits could force fishermen out of business. However, as described in the HMS FMP, implementation of alternatives C2 (359 mt dw) or C3 (1,760 mt dw) would not be expected to cause any social or economic hardship because these quota levels are higher than current landings. Similarly, because the final action (C1, 326 mt dw) restricts the quota to the highest level of reported landings and does not reduce the quota, this alternative should not result in any social or economic impacts.

Because alternative C4 (300 mt dw) is below the most recent landing levels, it could have some minor negative economic impacts if the quota is exceeded and the fishery is closed for the first time. This is especially true considering alternative D1, which would count any dead discards or state landings after a Federal closure against the Federal commercial quota. Because the SCS Federal fishery has never closed due to the quota being exceeded, it is likely that many states would not close their waters to SCS fishing with the Federal fishery closure. Thus, there could be a number of SCS caught in state waters after the closure, leading to smaller Federal commercial quotas in the future and shorter Federal seasons.

NOAA Fisheries would not expect any of the alternatives to have any social impacts on the communities because there are so few shark fishermen in this fishery (less than 11 vessels have fished in this fishery) that not many dealers or suppliers would rely on them.

Conclusion

Alternative C1 is the final action because it would cap fishing effort without causing any economic or social impacts. Other alternatives to reduce fishing mortality of finetooth sharks will be considered in the amendment to the HMS FMP.

5.4 Accounting for all Fishing Mortality

As described in section 2, the alternatives considered for accounting for all fishing mortality are:

- D1 Count dead discards and state landings after a Federal closure against the Federal commercial quota and,*
- D2 Do not count dead discards and state landings after a Federal closure against the Federal commercial quota.*

Alternative D1 is both the final action and the no action alternative. Under alternative D1, all sources of fishing mortality, including dead discards and landings in state waters after a Federal closure, will be accounted for in setting the Federal commercial quotas. This alternative, while finalized in the HMS FMP, has not been previously implemented. Under alternative D2, these sources of fishing mortality would not be counted against the Federal commercial quota.

Ecological Impacts

Observer data for the bottom longline fishery indicate that LCS discards account for approximately 5.7 percent of the total mortality attributable to LCS harvested from the fishery from 1994 to 2001 (Cortes and Neer 2002). In the menhaden fishery, approximately 75 percent of the sharks caught die; the majority of these sharks are LCS (Cortes and Neer 2002). Additionally, a number of sharks are discarded dead in the pelagic longline fishery (Cramer 2002). In the LCS stock assessment, estimates of LCS discards in the bottom longline fishery range from 3.8 to 6.3 thousand fish from 1999 through 2001. Large coastal shark discards from the menhaden fishery were estimated at 25.1 thousand fish in recent years. Using an average weight of 33.38 lb dw for all species of LCS (Cortes and Neer 2002), these estimates range from 437.6 to 475.4 mt dw. In the SCS stock assessment, estimates of SCS bycatch in the shrimp trawl fishery range from 1,282 thousand to 2,657 thousand fish or 0.6 to 1.1 mt dw from 1998 through 2000.

While fishermen have been concerned about counting state landings after a Federal commercial season against the Federal commercial quota due to “double dipping”, except for alternatives A2 (the HMS FMP quotas) and A3 (1,285 mt dw for all LCS), all the quota alternatives considered in this document are based on current landing levels including landings in state waters. Furthermore, none of the quota alternatives include current dead discard levels. Therefore, accounting for any overages, to ensure that fishing mortality does not exceed the levels in the 2002 stock assessments, is appropriate. Not accounting for these overages could cause fishing mortality to increase and could result in decreasing shark biomass levels.

These alternatives are not expected to alter fishing effort. However, under alternative D1, fishermen may try different gear modifications to reduce dead discard levels. This would be especially true if alternative B2 (minimum size for ridgeback LCS) is implemented with D1. Under alternative B2, dead discard levels could increase because fishermen would be required to discard any ridgeback LCS below the minimum size. In the LCS bottom longline fishery gear modifications might mean fishing in different areas or reducing soak times. In the SCS gillnet fishery, gear modifications might mean using strikenet instead of drift gillnet. Besides reducing

shark dead discards, these gear modifications may reduce interaction rates with protected species or other bycatch. For example, as described in the 2002 SAFE report, while the SCS observer program observed 23 interactions with protected species (sea turtles and dolphins) in 2001 during right whale calving season using drift gillnet, no interactions occurred on observed strikenet sets. Additionally, while 35 species of fish were observed caught as bycatch in the 2001 right whale calving season using drift gillnets, only 3 species were observed caught as bycatch for vessels using strikenet.

If alternative D2 was implemented, NOAA Fisheries would not expect any changes in fishing practices.

Social and Economic Impacts

The final action, alternative D1 (counting all sources of mortality against the Federal quota), could have minor economic impacts in the short term if dead discards or state landings after a Federal closure increase. However, under alternative A1 (783 mt dw for ridgeback LCS and 931 mt dw for non-ridgeback LCS), it is likely that the Federal commercial LCS season would be longer than usual. This longer season could actually reduce the number of dead discards and reduce the number of state landings after a Federal closure. Additionally, alternative B1 (no minimum size for LCS) would result in lower dead discards than alternative B2 (minimum size for ridgeback LCS). Thus, NOAA Fisheries does not expect alternative D1, especially in coordination with alternatives A1 and B1, to have any negative economic or social impacts. Similarly, NOAA Fisheries does not expect D1 in coordination with alternative C1 (326 mt dw for SCS) to have any economic or social impacts because under C1 the SCS fishery should not close and fishermen would not have any regulatory discards of SCS.

Alternative D2 (not counting all sources of mortality against the Federal quota) would not be expected to have any social or economic impacts in the short term. However, in the long term, this alternative could have negative social and economic impacts if fishing mortality increases beyond the levels analyzed in the 2002 LCS and SCS stock assessments and the stocks decline. If the stocks decline fishing effort, and therefore fishing costs, would have to increase in order to land the same number of fish.

Conclusion

NOAA Fisheries is implementing D1 because it should help maintain or rebuild shark stocks while not having any negative significant economic or social impacts on shark fishermen. Additionally, this alternative might have slight positive ecological impacts on bycatch and protected species. Under alternative D1, NOAA Fisheries will begin counting dead discards and state landings after a Federal closure in 2005. Because logbook information for a particular year is not available until at least six months after the end of that year, NOAA Fisheries will not have dead discard or state landings data available for 2003 until after the second 2004 semi-annual fishing season for sharks has started.

5.5 Seasonal Quota Adjustments

As described in section 2, the alternatives considered for accounting for all fishing mortality are:

- E1 *Count over- and under-harvests of the Federal commercial quotas when setting the Federal commercial quota for the same semi-annual season of the following year and,*
- E2 *Count over- and under-harvests of the Federal commercial quotas when setting the Federal commercial quota for the subsequent semi-annual season.*

Alternative E1 is both the final action and the no action alternative. Under this alternative, over- and under-harvests will be counted against or for the Federal commercial quota of the same semi-annual season of the following year (e.g. winter to winter). Alternative E2 would count over- and under-harvests against or for the Federal commercial quota of the following semi-annual season (e.g. summer to winter).

Ecological Impacts

Neither alternatives would have any direct ecological impacts on sharks, bycatch, or protected species because in both cases over- and under-harvests would be accounted for and fishing mortality levels would remain fairly stable. There could be some differences if bycatch or bycatch mortality differs between the two semi-annual seasons because of migration patterns, water temperatures, and mating/pupping seasons.

Neither alternative is expected to change fishing practices, effort, or shark landings.

Social and Economic Impacts

As described in the HMS FMP, neither alternative would have social or economic impacts on the shark fisheries as a whole. However, these alternatives could result in different impacts on individual fishermen. Because of migration and weather patterns, in the first semi-annual fishing season (i.e. winter), most shark fishermen are located in the Gulf of Mexico or southeast coast. In the second semi-annual fishing season (i.e. summer), there are the same fishermen and additional fishermen from the mid-Atlantic and New England coasts.

Under alternative E1, fishermen who fish only in one season (e.g., fishermen in the mid-Atlantic) will be directly affecting their own actions the following year if that season's quota is over- or under-harvested. In other words, if summer fishermen do not land the entire semi-annual quota in one summer, the following summer they would have a chance to land the full semi-annual quota plus the amount left over. Thus, under alternative E1, fishermen will not be expected to experience any economic or social impacts.

However, under alternative E2, fishermen who fish only in one season will be directed affected by the actions of the fishermen who fished in the previous season. In other words, if winter fishermen exceed the semi-annual quota, summer fishermen would have a smaller quota. Thus, under alternative E2, fishermen could experience either positive or negative economic and social impacts depending on the fishing activity of fishermen in the previous season.

For fishermen who fish in both seasons, neither alternative would have social or economic impacts.

Conclusion

While neither alternative would have direct ecological impacts, NOAA Fisheries is implementing alternative E1 because it minimizes the potential for economic and social impacts on fishermen who only fish in one semi-annual fishing season. Under either of these alternatives, NOAA Fisheries would add the under-harvest from the second 2002 semi-annual season to the appropriate semi-annual season in 2003.

5.6 Impacts on Essential Fish Habitat (EFH)

As described in the HMS FMP, because bottom longline does touch the bottom substrate, the gear could become hung or entangled on various elements of the substrate and could alter the habitat for prey species. However, bottom longline gear is not likely to cause substantial damage. Additionally, because the final actions are not expected to change fishing practices or effort, the final actions are not expected to change the impact of bottom longline gear on EFH beyond those impacts considered in the HMS FMP. Also, as described in the HMS FMP, NOAA Fisheries recommends fishermen take appropriate measures to identify and avoid such bottom obstructions in order to mitigate any adverse impacts on EFH. The other gear types used to target sharks, such as gillnet or pelagic longline, are unlikely to have any impact on EFH.

5.7 Impacts on Other Finfish Species

As described in the sections above, the final actions are not expected to alter fishing practices or effort and therefore should not have any impact on other finfish species that have not already been considered in the HMS FMP or the final supplemental environmental impact statements finalized since then. Finfish bycatch for the bottom longline fishery includes, in order of occurrence, snappers/groupers, red drum, cobia/dolphin, catfish, eel, barracuda, tuna/swordfish, and jacks. According to the HMS FMP, finfish bycatch was only approximately 3.2 percent of the catch in the bottom longline fishery. In the shark drift gillnet fishery, bycatch includes king mackerel, little tunny, cownose ray, crevalle jack, cobia, spotted eagle ray, great barracuda, tarpon, Atlantic stingray, and Spanish mackerel and accounts for approximately 7.4 percent of the catch (Carlson 2001). Because the action will not result in a change in fishing effort or practices, NOAA Fisheries does not expect that sustainability of these bycatch species will be jeopardized by the action.

5.8 Impacts on Protected Species

On June 14, 2001, NOAA Fisheries released, under Section 7 of the Endangered Species Act (ESA) a Biological Opinion (BiOp) for Atlantic HMS Fisheries. This BiOp analyzed the impacts of shark fisheries on listed marine mammals and sea turtles, took into account recent landings and concluded that the southeast gillnet fishery for sharks, the bottom longline fishery, commercial handgear fishery, and rod and reel fisheries may adversely affect but are not likely to jeopardize the continued existence of the right whale, humpback, fin, or sperm whales, or

Kemp's ridley, green, loggerhead, hawksbill, or leatherback sea turtles. While the BiOp did find that the continued operation of the Atlantic pelagic longline fishery is likely to jeopardize the continued existence of the leatherback and loggerhead sea turtles, pelagic longline gear is generally not used to target LCS or SCS, and NOAA Fisheries has implemented a final rule to implement the Reasonable and Prudent Alternative outlined in the BiOp and is conducting an experiment to test gear modifications that could further reduce sea turtle interactions. NOAA Fisheries has also implemented the Reasonable and Prudent Measures and some of the Terms and Conditions of the BiOp including, but not limited to, continuing bottom longline observer program, requiring net checks in the drift gillnet fishery, and requiring pelagic and bottom longline fishermen to post sea turtle handling and release guidelines.

As described in this section, because the final actions are not expected to alter fishing practices or effort, NOAA Fisheries believes that the final actions do not change the conclusion of, nor would they result in effects that have not been considered in, the BiOp. Depending on the measures considered in the amendment to the HMS FMP regarding shark management, NOAA Fisheries may reinitiate consultation under Section 7 for HMS fisheries during the next year.

Under Section 118 of the Marine Mammal Protection Act (MMPA), NOAA Fisheries publishes a List of Fisheries (LOF) that places all U.S. commercial fisheries into one of three categories based on the level of incidental serious injury and mortality of marine mammals that occurs in each fishery. The categorization of a fishery in the LOF determines whether participants in that fishery may be required to comply with certain provisions of the MMPA, such as registration, observer coverage, and take reduction plan requirements. On January 17, 2002 (67 FR 2410), NOAA Fisheries announced that the pelagic longline fishery is a category I fishery (animals injured or killed include humpback, minke, and pilot whales and Risso's, bottlenose, Atlantic spotted, and common dolphins), the southeast shark gillnet fishery is a category II fishery (animals injured or killed include bottlenose dolphin, right whale, and Atlantic spotted dolphin), and the bottom longline fishery is a category III fishery (no documented takes of marine mammals).

Because of potential impacts on marine mammals, the southeast shark gillnet fishery is considered by the Large Whale Take Reduction Team and in the Large Whale Take Reduction Plan. Additionally, the southeast shark gillnet fishery has 100 percent observer coverage during the Right whale calving season and 53 percent observer coverage the remainder of the year. While some marine mammals and sea turtles were observed caught while vessels allowed the gillnet to drift (in 2001: three species of sea turtles comprising 0.10 percent of the observed catch; two species of marine mammals comprising 0.04 percent of the observed catch; Carlson 2001), no protected species were caught when vessels fished in a strikenet fashion (Carlson 2001). NOAA Fisheries continues to work with fishermen to reduce protected species interactions in this fishery. The final actions in this document are not expected to change fishing practices or effort and therefore are not expected to change the number or rate of interactions with marine mammals.

5.9 Cumulative Impacts of the Alternatives

On May 28, 1999, NOAA Fisheries published a final rule (64 FR 29090) that implemented the HMS FMP and Amendment One to the Atlantic Billfish FMP, and that consolidated regulations for Atlantic HMS into one C.F.R. part. The Final Environmental Impact Statements (FEIS) associated with these FMPs addressed the rebuilding and ongoing management of Atlantic tunas, swordfish, sharks, and billfish. Alternatives to rebuild and manage the Atlantic shark fisheries included, among other things, quotas for LCS, SCS, and pelagic sharks, a public display and scientific quota, retention and size limits, a prohibition on shark finning, overharvest and underharvest adjustment authority, and permitting and reporting requirements, including a limited access system. The HMS FMP concluded that the cumulative long-term impacts of these and other management measures would be to rebuild overfished fisheries, minimize bycatch and bycatch mortality, to the extent practicable; identify and protect essential fish habitat; and minimize adverse impacts of fisheries regulations on fishing communities, to the extent practicable.

Since the HMS FMP, NOAA Fisheries has finalized two supplemental environmental impact statements. The first one, published in June 2000, analyzed management measures, particularly time area closures, to reduce bycatch, bycatch mortality, and incidental catch in the pelagic longline fishery. The final actions were expected to have negative direct, indirect, and cumulative economic and social impacts for pelagic longline fishermen and were expected to have positive benefits regarding reduction in bycatch and bycatch mortality. This rulemaking was expected to have little impact on directed shark fishermen but could impact fishermen who catch and land sharks incidentally.

The second supplemental environmental impact statement, published in July 2002, implemented the measures in a June 14, 2001, Biological Opinion addressing of sea turtle bycatch and bycatch mortality in HMS fisheries. Certain measures in this rulemaking, such as the closure of the Northeast Distant Area (NED) to pelagic longline vessels, are expected to have negative direct, indirect, and cumulative economic and social impacts on pelagic longline fishermen, which are mitigated in the short-term for vessels that participate in an experimental fishery in the NED. This rulemaking also implemented measures in the shark gillnet fishery. The management measures for the shark gillnet fishery (required net checks for sea turtles and other marine mammals at least every 2 hours and ceasing of fishing and notification to NOAA Fisheries if a whale is taken) are anticipated to have little to no adverse impacts on shark fishermen and are expected to have some positive impact in regard to possible reductions in sea turtle mortality.

As discussed in section 1 of this document, the LCS and SCS quotas and certain measures from the 1999 final rule were never implemented due to litigation. Taking into consideration the August 2000 bycatch and time area rule, the March 2001 emergency rule, the December 2001 emergency rule and extension, the July 2002 rule implementing the Biological Opinion measures, and the fact that NOAA Fisheries will work on an FMP amendment for shark management measures in 2003, no adverse cumulative impacts are anticipated from this emergency rule in the short- and long-term. While some of the alternatives, such as alternative A2 (the HMS FMP LCS quota), could have had adverse, direct economic and social impacts, the final actions are not expected to change current fishing practices or effort or to cause significant

ecological, economic, and social impacts. Moreover, the 2002 stock assessments for LCS and SCS indicate that, under past and present management measures, some shark stocks continue to be overfished but are rebuilding (e.g. the sandbar shark), some shark stocks are fully rebuilt (e.g. the blacktip shark), and some shark stocks remain healthy (e.g. the Atlantic sharpnose). While the 2002 SCS stock assessment does indicate that overfishing is occurring on finetooth sharks, the biomass of the stock is still above the level at which it would be overfished. The measures put into place here should maintain that biomass level until a rebuilding plan is implemented. In all, the final actions, both individually and in combination with each other, would continue to prevent overfishing or facilitate rebuilding of the stocks without adverse economic or social impacts pending an amendment to the HMS FMP.

5.10 Mitigating Measures

The final actions will assist NOAA Fisheries in achieving the objective of this rulemaking and the Magnuson-Stevens Act and are not expected to have any significant ecological, social, or economic impacts. The final actions were considered as a whole in order to achieve the objective of the rulemaking while minimizing adverse impacts. For example, implementation of both the minimum size requirement (alternative B2) and the final action of counting dead discards against the commercial quota (alternative D1) could have resulted in adverse economic impacts and may not have assisted in rebuilding shark stocks. But the final actions of not implementing the minimum size requirement (alternative B1) and implementing counting dead discards against the commercial quota are not expected to have as large an economic impact as the alternative and will not hinder the rebuilding of shark stocks. While NOAA Fisheries anticipates no significant adverse impacts from this action, the agency will mitigate impacts, if any, by:

- Monitoring the impact of this final action on the fishery and considering the public comments received on this emergency rule and the results of the peer review of the 2002 LCS stock assessment before modifying these actions;
- Considering any impacts of these actions in the amendment to the HMS FMP, as needed, for additional mitigation measures;
- Continuing to recommend, as in the HMS FMP, that fishermen take appropriate measures to identify and avoid bottom obstructions in order to avoid damage to the bottom substrate; and
- Examining methods of expanding upon the bottom longline observer data to estimate better the number of protected species interactions for the entire fleet.

5.11 Unavoidable Adverse Impacts

The final actions will assist NOAA Fisheries in achieving the objective of this rulemaking and the Magnuson-Stevens Act and are not expected to have any unavoidable adverse impacts.

5.12 Irreversible and Irretrievable Commitment of Resources

The final actions will assist NOAA Fisheries in achieving the objective of this rulemaking and the Magnuson-Stevens Act and are not expected to have any irreversible or irretrievable commitments of resources.

Table 5.1 **Total Number of Sharks Observed Caught by the Southeast Shark Gillnet Fishery Observer Program:** Source: Carlson, 2001.

Species	With Drift Gillnet 2001 Right Whale Calving Season	With Strikenet 2001 Right Whale Calving Season	With Drift Gillnet 2000-2001 Outside of Right Whale Calving Season	With Striket 2000-2001 Outside of Right Whale Calving Season
Blacktip	4,774	3,037	422	54
Bonnethead	4,617	0	123	0
Atlantic sharpnose	3,259	0	8,688	0
Finetooth	1,320	0	164	4
Blacknose	374	1	726	111
Scalloped hammerhead	168	0	14	0
Spinner	141	0	2	10
Great hammerhead	129	0	1	0
Bull	12	1	2	0
Tiger	5	0	3	0
Common thresher	4	0	0	0
Mackerel	3	0	0	0
Sandbar	2	0	0	0
Unknown requiem	1	0	0	0
Nurse	0	1	0	0

6.0 ECONOMIC ANALYSES AND REGULATORY IMPACT REVIEW

This section assesses the economic impacts of the alternatives presented in this document. The Regulatory Impact Review (RIR) is conducted to comply with Executive Order 12866 (E.O. 12866) and provides analyses of the economic benefits and costs of each alternative to the nation and the fishery as a whole. Certain elements required in an RIR are also required as part of an environmental assessment (EA). Thus, this section should be considered only part of the RIR, the rest of the RIR can be found throughout this document.

Because this rule was not available for public comment before implementation, it is exempt from the requirements of the Regulatory Flexibility Act. However, because the final actions described in this document relieve some restrictions on the fishery and because the associated emergency rule is of limited duration, NOAA Fisheries does not expect the rule associated with this environmental assessment to have significant economic impacts on a substantial number of small entities. NOAA Fisheries will consider any comments received during the public comment period of the emergency rule that relate to the economic impacts of the preferred alternatives before amending the associated emergency rule.

6.1 Economic analyses of management measures

Sections 3.4, 7.6, and 7.7 of the HMS FMP describe the economic benefits and costs to the nation and individual fishermen of a number shark management alternatives. Because similar alternatives are considered in this document, a number of these analyses are relevant with respect to this action. Additional economic information can also be found in section 5 of the 2002 SAFE report and in section 8 of the Final Supplemental Environmental Impact Statement for Regulatory Adjustment 2 regarding reducing sea turtle bycatch and bycatch mortality in HMS fisheries. Please see the above referenced sections for more economic information regarding the commercial shark fishery and the impact of some of the alternatives considered in this document.

6.1.1 Number of fishing and dealer permit holders

As of October 2002, approximately 376 fishermen had been issued an incidental commercial shark limited access permit and 251 had been issued a directed commercial shark limited access permit. The addresses of these permit holders range from Texas through Maine with half (50 percent) of the permit holders located in Florida. Most of directed permit holders use bottom longline to target sharks. The number of directed permit holders reporting shark landings in logbooks is generally less than 100 in any given year. Because of the limited number of permits, the relatively short season lengths, and the relatively little profit available from shark fishing, it is unlikely that the number of active directed shark permit holders would increase substantially.

The number of directed permit holders that use gillnet gear to fish for sharks has been less than 11 vessels in recent years (Table 6.1). These fishermen fish off the east coast of Florida and Georgia. Because of the gear restrictions, the relatively short LCS season, the small profit margin, and the observer coverage requirements for these vessels, it is unlikely that the number of vessels in the gillnet fishery would increase substantially.

Also, as of October 2002, there were 266 dealers permitted to buy sharks. Dealer addresses also range from Texas through Maine with 38 percent located in Florida. NOAA Fisheries believes that all permit holders and related businesses (e.g. bait shops, tackle shops, processors, exporters) - all of which are considered small entities - could experience a range of impacts because of the preferred action described in this document. These impacts are described in this document and in the HMS FMP.

6.1.2 Gross revenues of commercial shark fishermen

Of all Atlantic HMS, sharks bring in the lowest total gross revenues (~\$5.5 million total in 2000). If this is averaged across the approximately 100 active directed shark permit holders, then the average annual gross revenues per shark fisherman is just over \$55,000. Because this does not consider the sharks landed by incidental permit holders, this average annual gross revenues estimate should be considered high.

Average ex-vessel prices of LCS meat across all regions was approximately \$0.68 per lb dw in 2000. Pelagic sharks brought in the largest ex-vessel price at \$1.09 per lb dw and SCS brought in the lowest ex-vessel price of \$0.46 per lb dw. Shark fins have a large ex-vessel price of \$10.47 per lb.

6.1.3 Variable costs and net revenues of commercial shark fishermen

Little economic data are available specifically on the costs of bottom longline fishing. In 2003, NOAA Fisheries will begin to select 20 percent of all active directed commercial shark fishermen to report cost earnings information. The collection of this information (OMB No. 0648-0371, expiration June 30, 2005) will greatly improve shark management.

NOAA Fisheries believes that the variable costs for commercial shark fishermen using bottom longline gear are similar to the fishing costs for pelagic longline. There are some costs which may be lower for bottom longline gear. For instance, shark fishermen should not need lightsticks (used to catch swordfish) and often set less gear than pelagic longline fishermen. McHugh and Murray (1997) found that a seven day trip had an average profit (owner's share of catch minus all expenses) of \$1,589. Vessels between 40 and 49 feet had an average profit of \$1,975 for a seven day trip.

At this time, NOAA Fisheries also has limited information available regarding variable costs of shark gillnet fishing. NOAA Fisheries expects that the fishing costs per trip are less than those of a pelagic longline fishing trip because the trips are usually shorter (an average of 18 hours per trip), vessels do not fish far offshore (within 30 nautical miles from port), and the gear does not need hooks, bait, or light sticks. Other costs, such as net repair, may be incurred.

Shark gillnet vessels that fish in a strike-net method probably incur higher costs per trip than those vessels that fish in a drift gillnet method. This is because strikenetting usually requires the use of a small vessel (used to run the net around the school of sharks) and a spotter plane (used to spot schools of fish). While the cost per trip is higher than the traditional drift gillnet method, bycatch in this method is extremely low, catch rates of the target species is high, and vessels can

complete a set in less time (one hour versus nine hours). NOAA Fisheries estimates that the smaller vessel could cost between \$2,000 and \$14,000 to buy. Because these second vessels have specific requirements to be sturdy enough to hold the gillnet and move quickly around the school of sharks, it is likely that vessel owners would need to re-fit any used vessel bought for this purpose. Additionally, a second vessel means additional fuel and maintenance costs. Spotter planes in other fisheries are paid based on the percentage of the proceeds from the trip, generally 10 to 25 percent of gross revenues. Thus, given the average gross revenues per trip, converting a drift gillnet vessel to a strikenet vessel could be prohibitive.

Recently some strikenet vessels have begun striking behind other vessels such as trawl vessels (e.g., shrimp vessels). This negates the need for a spotter plane and could reduce the variable costs substantially. Additionally, some of the smaller drift gillnet vessels have begun to use small nets to strike fish without a second vessel (Carlson, 2002). Their efforts are moderately successful and could reduce the costs of the fishing in a strikenet method substantially by reducing the amount of net that needs to be repaired and the amount of additional gear needed.

6.1.4 Expected economic impacts of the LCS commercial quota levels

NOAA Fisheries considered five separate LCS quota alternatives. None of the quota alternatives considered are likely to change fishing costs.

Fishermen have been fishing under alternative A3, 1,285 mt dw, since 1997. As a result of this alternative, many shark fishermen left the fishery or made the decision to fish for sharks on a part-time basis.

Two of the alternatives considered, A2 (the HMS FMP LCS quotas) and A4 (846 mt dw for all LCS), would decrease the quota. Any decrease in the quota would also lead to shorter seasons, possibly one month for each semi-annual season. This in turn could lead to lower ex-vessel prices because of market gluts and the difficulty in finding buyers for fish that are only available for a short period of time each year. Thus, these two alternatives would likely force additional fishermen out of the fishery and could lead to an incidental only fishery.

The other two alternatives considered, A1 (final action; 783 mt dw for ridgeback LCS and 931 mt dw for non-ridgeback LCS) and A5 (793 mt dw for ridgeback LCS and 966 mt dw for non-ridgeback LCS), would increase the quota. Any increase in the quota would also lead to longer seasons. This in turn could lead to higher ex-vessel prices because fishermen would be able to bring LCS to the dock over time, eliminating market gluts, and because fishermen could make arrangements with dealers in advance. However, in combination with counting all fishing mortality against the quota, it is likely that the higher quota level would not induce more fishermen with shark permits to enter the fishery at this time. In other words, the increase in quota would likely help fishermen who have remained active in the shark fishery, not fishermen who are active in other fisheries and may land sharks incidentally. Also, because these quota levels, particularly in combination with the other final actions, are not expected to increase LCS landings, it is unlikely that profits would increase.

6.1.5 Expected economic impacts of the LCS size limits

NOAA Fisheries considered implementing the minimum size finalized in the HMS FMP (B2) and not implementing it (B1). As described in the HMS FMP, implementation of a minimum size could increase fishing costs because fishermen would either have to fish farther offshore to avoid fish smaller than the minimum size or set additional gear in order to catch more fish that meet the minimum size requirement. Either option could require additional fuel, bait, groceries, and possibly additional gear. However, implementation of a minimum size could also increase ex-vessel price slightly because fishermen would be landing fish that have more meat and that have more larger fins. Under the final action, no minimum size, NOAA Fisheries does not expect any changes in fishing costs or ex-vessel prices.

6.1.6 Expected economic impacts of the SCS commercial quota levels

NOAA Fisheries considered four different SCS quota alternatives. None of the quota alternatives considered are likely to change fishing costs.

Because these quota levels are greater than the total of all reported landings in any year since management began, neither alternative C2 (359 mt dw) nor alternative C3 (1,760 mt dw) are expected to change ex-vessel prices or economic benefits. Similarly, because the final action (C1) caps landings at the highest landings level reported for this fishery, and does not lower recent landings, the final action is also not expected to change ex-vessel prices or economic benefits.

Alternative C4 (300 mt dw) could have some minor negative impacts on fishermen because it is a slight decrease from 2001 landings. This slight decrease could cause a fishery closure as a result of the quota being exceeded. A closure is possible in combination with alternative D1, counting all fishing mortality against the quota. However, because alternative C4 is the average of recent landings, this alternative should not have significant economic impacts.

6.1.7 Expected economic impacts of accounting for all fishing mortality

NOAA Fisheries considered two alternatives: counting all fishing mortality against the Federal quotas (D1) and not (D2). While the final action (D1) could have economic impacts in the short term because it could result in less quota available, alternative D2 could have economic impacts in the long term if fishing mortality exceeds the sustainable level. Alternative D1 could also have increased fishing costs in the short term if fishermen attempt to modify gear to minimize bycatch. In the long term, this approach could reduce fishing costs and increase economic benefits for the fishery.

Additionally, under alternatives A1 (783 mt dw for ridgeback LCS and 931 mt dw for non-ridgeback LCS), B1 (no minimum size), and C1 (326 mt dw for SCS), it is likely that regulatory discards would be minimal because the LCS season would be longer, there would be no minimum size, and the SCS season would likely not close. Also, because the LCS season would be slightly longer than in the past few years, it is likely there would be fewer LCS state landings

after the Federal closure. Thus, in combination with the other alternatives, alternative D1 should have minimal economic impacts.

6.1.8 Expected economic impacts of seasonal quota adjustments

Neither alternative considered would have economic impacts on the fishery as a whole. However, as explained in section 5.5, the alternatives could have different impacts on individual fishermen, particularly fishermen who only fish in one of the two semi-annual seasons.

6.2 Regulatory Impact Review

6.2.1 Description of the management objectives

Please see section 1 for a description of the objective of this rulemaking.

6.2.2 Description of the fishery

Please see section 4 for a description of the fisheries that could be affected by this rulemaking.

6.2.3 Statement of the problem

Please see section 1 for a description of the problem and need for this rulemaking.

6.2.4 Description of each alternative

Please see section 2 for a summary of each alternative and section 5 for a complete description of each alternative and its expected ecological, social, and economic impacts.

6.2.5 Economic analysis of expected effects of each alternative relative to the baseline

NOAA Fisheries does not believe that the national net benefits and costs would change significantly in the long term as a result of implementation of the final actions. The total amount of sharks landed and available for consumption are not expected to change. Table 6.2 indicates the possible net economic benefits and costs of each alternative.

6.2.6 Conclusion

Under E.O. 12866, a regulation is a “significant regulatory action” if it is likely to: 1) have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities; 2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; 3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights, and obligation of recipients thereof; or 4) raise novel legal or policy issues arising out of legal mandates, the President’s priorities, or the principles set forth in the Executive Order. The

final actions described in this document and in the emergency rule do not meet the above criteria. Therefore, under E.O. 12866, the final actions described in this document have been determined to be not significant for the purposes of E.O. 12866. A summary of the expected net economic benefits and costs of each alternative can be found in Table 6.2.

Table 6.1 **The number of operating shark gillnet vessels.** Source: Trent *et al.*, 1997; Carlson and Lee, 1999; Carlson and Baremore, 2001.

Year	Number of vessels	Year	Number of vessels
1990	11	1996	unknown
1991	unknown	1997	unknown
1992	unknown	1998	unknown
1993	5	1999	4
1994	6	2000	6
1995	11	2001	6

Table 6.2 **Summary of the net benefits and costs for each alternative**

Alternative	Net Economic Benefits	Net Economic Costs
<i>LCS Commercial Annual Quota Level</i>		
A1 - final action	In short term, markets may stabilize due to longer season. In long term, shark biomass may continue to increase resulting in fewer fishing costs, less time on the water, and increasing availability.	None.
A2	In short term, none. In long term, sharks may rebuild quicker resulting in fewer fishing costs, less time on the water, and increasing availability.	In short term, many shark fishermen and dealers may be forced out of business.
A3	Minimal.	Minimal.
A4	In short term, none. In long term, sharks may rebuild quicker resulting in fewer fishing costs, less time on the water, and increasing availability.	In short term, many shark fishermen and dealers may be forced out of business.
A5	In short term, markets may stabilize due to longer season.	None.
<i>Commercial LCS Size Limits</i>		
B1 - final action	Minimal.	Minimal.
B2	Ridgeback LCS landed would likely have more meat and larger fins resulting in greater ex-vessel prices.	Fishing costs and time spent fishing could increase because fishermen would need to fish further offshore and would have to discard sharks below the minimum size. Or fishing costs and time spent fishing could increase because fishermen would set more gear inshore in order to catch the same number of legally sized fish.

Alternative	Net Economic Benefits	Net Economic Costs
<i>SCS Commercial Annual Quota Levels</i>		
C1 - final action	Minimal.	Minimal.
C2	Minimal.	Minimal.
C3	Minimal.	Minimal.
C4	Minimal.	Could result in a small loss of revenues if fishery is closed.
<i>Accounting for all Fishing Mortality</i>		
D1 - final action	In short term, none. In long term, shark biomass may continue to increase resulting in fewer fishing costs, less time on the water, and increasing availability.	If large numbers of sharks are discarded, or if state fishermen landed a substantial number of sharks after a Federal closure, could result in shorter seasons and loss of revenues.
D2	Minimal.	In long term, shark biomass levels may decrease resulting in increased fishing costs and lower revenues.
<i>Seasonal Quota Adjustments</i>		
E1 - final action	Minimal.	Minimal.
E2	Minimal.	Minimal.

7.0 COMMUNITY PROFILES

Section 102(2)(a) of the National Environmental Policy Act (NEPA) requires Federal agencies to consider the interactions of natural and human environments by using “a systematic, interdisciplinary approach which will ensure the integrated use of the natural and social sciences . . . in planning and decision-making.” The Magnuson-Stevens Act also requires consideration of social impacts. Federal agencies should address the aesthetic, historic, cultural, economic, social, or health effects which may be direct, indirect, or cumulative. Consideration of the social impacts associated with fishery management measures is a growing concern as fisheries experience variable participation and/or declines in stocks.

The following towns were identified during the HMS FMP development and are analyzed for social impacts in this action due to the importance of large and small coastal shark fishing to the community: Wanchese, NC; Madeira Beach, FL; Panama City, FL; and Dulac, LA. These communities are discussed in detail in chapter 9 of the HMS FMP.

The impacts of all the final actions will be minor in all of these communities. The action to increase the LCS quota slightly (A1) could increase the time spent fishing for sharks but could also allow fishermen more time to plan activities with their families during the fishing season because the semi-annual fishing seasons would likely be longer. Additionally, because individual shark fishermen might land more fish than they have under the 1,285 mt dw quota and might fish for longer during the season, dealers, suppliers, and other related industries within the community could experience positive benefits. The other final actions (no minimum size on LCS, capping the SCS quota at highest landings levels, counting all sources of fishing mortality, and season specific quota adjustment) would likely have minimal impacts on communities because they would not significantly change the current fishing practices, fishing effort, landings, or time spent fishing.

8.0 OTHER CONSIDERATIONS

8.1 National Standards

The analyses in this document are consistent with the National Standards (NS) set forth in the 50 C.F.R. part 600 regulations.

This rule is consistent with NS 1 in that it would prevent the overfishing of some species of sharks and maintain the status of other species of sharks until an amendment to the HMS FMP and the SCS rebuilding plan can be implemented. Because the alternatives are based on the results of the 2002 LCS and SCS stock assessments, the alternatives considered are based on the best scientific information available (NS 2), including self-reported, observer, and stock assessment data which provide for the management of these species throughout their ranges (NS 3). At the time this document was drafted, an independent peer review process for the 2002 LCS stock assessment, required under a court-approved settlement agreement, was still ongoing. The 2002 LCS stock assessment is a comprehensive, 222 page analytical document, which the agency believes constitutes the best available science. However, once the results of the peer review are available to all NOAA Fisheries staff and to the public, NOAA Fisheries will review the peer reviews and ensure that the final actions are still consistent with the best available science.

The final actions do not discriminate against fishermen in any state (NS 4) nor do they alter the efficiency in utilizing the resource (NS 5). With regard to NS 6, the final actions, particularly alternatives D1 and E1, take into account any variations that may occur in the fishery and the fishery resources. Additionally, NOAA Fisheries considered the costs and benefits of these management measures economically and socially under NS 7 and 8 in sections 5, 6, and 7 of this document. The final actions could ensure that the bycatch, in terms of dead discards, is counted against the quota and NOAA Fisheries has considered the impact of the final actions on protected species (NS 9). Finally, the final actions would not require fishermen to fish in an unsafe manner (NS 10).

8.2 Coastal Zone Management Act

NOAA Fisheries has determined that these emergency regulations are consistent to the maximum extent practicable with the enforceable policies of those coastal states in the Atlantic, Gulf of Mexico, and Caribbean that have approved coastal zone management programs. Letters have been sent to those states for their concurrence.

8.3 Marine Mammal Protection Act and the Endangered Species Act

The final actions in this document are consistent with the Marine Mammal Protection Act and the Endangered Species Act. As described in the sections above, the final actions are not expected to alter fishing practices or effort. The Office of Protected Resources has concurred with the Office of Sustainable Fisheries that, because the level of fishing effort and fishing practices is not expected to change as a result of this emergency rule, this emergency rule will

not change the conclusion of, nor would it result in effects that have not been considered in, the June 2001 BiOp.

8.4 Environmental Justice Concerns

Executive Order 12898 requires that federal actions address environmental justice in the decision-making process. In particular, the environmental effects of the actions should not have a disproportionate effect on minority and low-income communities. The final actions in this document would not have any effects on human health. Additionally, the final actions are not expected to have any social or economic effects. If there are social or economic impacts, they would be slightly positive because some of the final actions relieve restrictions.

9.0 LIST OF PREPARERS

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